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ABSTRACT

Data gathered in theoretical and field studies on human resources development carried out by international and national teams and through site visits were analyzed to show developing themes and issues in human resources, particularly in the area of skills development. Some of the issues and themes that will have an impact on the future of skills development include the following: (1) dynamic, interdependent processes are involved in concurrent changes, particularly those affecting skill formation; (2) continuous on-the-job learning and recurrent off-the-job learning are needed; (3) the concept of skill formation integrates the traditional concepts of education and training; (4) innovations in the workplace are occurring to meet the demands of dynamically changing pressures of the marketplace; (5) there are cross-cultural demands for new individual and organizational behavior, such as adaptability and flexibility, commitment and competence, cooperation and competition, and accountability and responsiveness; and (6) successful enterprises are changing technologies to emphasize quality in production, adaptation, communication, and a high quality learning and working environment. (This report contains 25 drawings/transparencies on the emerging concept of skill formation.) (KC)

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INNOVATIONS in POST-SCHOOL SKILL FORMATION MARKETS

Interim presentation prepared for the

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INNOVATIONS IN POST-SCHOOL SKILL FORMATION MARKETS

1. ORIGINS AND OBJECTIVES

The origins of this project were in the OECD/CERI concern to develop improved understanding of emerging human resource strategies in the context of technological and organisational restructuring in the economies.

The objectives of this exploratory project were to gain a deeper understanding of:

i) the emerging concepts of skill formation;
ii) how innovations in post-school skill formation are being influenced by concurrent changes
    a) in external and internal pressures on organisations,
    b) in organisational concepts, work organisation, technologies and employee relations;
    and
iii) the implications of the above for the provision and providers of skill formation

During the course of the research, it became clear that many of the people involved in innovations in skill formation have reconceptualised the field in which they operate. Even though they may sometimes use traditional terms to communicate what they are doing to outsiders, they often tend to use these terms to describe something that was conceptually or qualitatively new.

This led to a further objective of questionning the appropriateness of many traditional concepts used by people in the fields of education, industrial relations, labour economics and personnel management.

2. METHODOLOGY

The study draws on the theoretical and field studies carried out by the international and national teams during the three phases of the OECD/CERI projects on Human Resource Development. This was supplemented by additional visits in 1988/ 9 to organisations and researchers in Sweden, France, Netherlands and the United States. The intellectual and practical support of Jarl Bengtsson was always a driving force in the development and execution of the project.

3. THE PRESENTATION OF THE PROJECT REPORT

An impressive feature of many successful learning based enterprises is how they are innovatively using advanced information technology to present information and analysis to their internal* and external markets. This has been particularly important in empowering their employees to understand and participate in organisational change.

This presentation draws on the experience of such learning based organisations. It uses graphical techniques to illustrate the diverse, concurrent and interdependent nature of key transformations that are affecting organisations and employees in the developed economies. The diagrams highlight the interactive nature of these changes and show that changes in one variable can effect changes in another. Such visual presentations of dynamic interactions, illustrates vividly the need to shift from traditional 'stand alone' analysis of single issues to more complex systems analysis.

The following series of interactive diagrams were therefore developed to provide people with tools to help them to develop their understanding and perspectives on:

i) the complexity and diversity of the changes affecting them and their organisations; and

* The 'Nordic School of Marketing' has in recent years devoted considerable attention to the concept of 'internal marketing'.

ii) the dynamic interdependent processes involved in concurrent changes, particularly those affecting skill formation.

The development of such broader understanding and perspectives in turn provides an opportunity:

iii) to focus on holistic systems rather than on tradition 'stand alone' issues;
and

iv) to reconceptualise and restructure policies for the participative development of skill formation processes.

Also, the pace and pervasiveness of inter-related organisational transformations have created an urgent need for people to understand their traditional 'mind sets'. These are based often on many years of experiential learning. They need new frameworks to unlock their visions of the past and to develop new more dynamic mind sets, based on developing their understanding of their contemporary and future environments.

To keep the presentation within the time constraints of our meeting in Washington, I have chosen to limit my report:

i) to emphasise some of the diverse, interdependent changes that are influencing the development of innovations in skill formation;

ii) to illustrate the implications for skills and skill formation of key transformations in organisations, work organisation, technology and skills formation;

iii) to raise questions relevant to the providers of skill formation; and

iv) to raise questions about the appropriateness of many traditional assumptions, classifications and concepts that influence research and policy in skill formation.

4. THE EMERGING CONCEPT OF SKILL FORMATION

In any study involving new concepts, it is important to clarify the concepts.

The central concept in this study is skill formation. The concept probably has its roots in the German concept of formation. However, it is in Japan where it has emerged as a powerful theoretical and operational concept. But even in Japan it is used in reference to a diversity of practices. In other societies, skill formation is often narrowly used as a substitute expression for training.

Skill formation is an emerging: (see diagram 1)
holistic concept that embraces and integrates formal education, organisational induction and continuous on-the-job learning, recurrent off-the-job learning and personal development.

It is also:

an adaptive and flexible concept that accommodates the diversity in organisational and national cultures;

a dynamic concept that accommodates diverse changes, particularly in technologies and work organisation;

a pluralistic concept that accommodates diverse traditions of learning and possible diverse interests of individuals, organisations and nations.

Skill formation may require considerable negotiations, for the interests of individuals, groups and organisations are not necessarily the same, particularly in periods of change.

The sub-concepts of continuous on-the-job learning and recurrent off-the-job learning are conceptually different from traditional perceptions of on-the-job and off-the-job training. The latter tends to be perceived and practiced in terms of truncated front-end-models of formal training and tends to ignore the potential learning role of work organisation.

Finally, the concept of skill formation integrates the traditional concepts of education and training. The development of the concept of skill formation therefore illustrates the blurring and fusing of such traditional dichotomies and lines of demarcation.

5. INTERNATIONALISATION

CONCURRENT MULTIDIMENSIONAL DEMANDS

The O.E.C.D./C.E.R.I. studies on Human Resource Development in the Context of Technological and Organisational change clearly illustrated the dominant importance of the Internationalisation of the world economies. Standards are increasingly being set at an international level. Organisations are therefore increasingly required to concurrently meet multidimensional demands in terms of quality, adaptability, reliability, improvement, innovation and service (see diagram 2). These concurrent demands affect organisations in both the private and public sectors, and in manufacturing and in service sectors. They even affect organisations that are not involved in international trade.

These demands are transmitted by a variety of ways. For example, by increases in international travel for commercial and leisure activities, by international communication and media systems, by transfer of technologies and techniques, by transfer of managerial concepts and philosophies and by transfer of economic and social pressures and aspirations.

The outcomes of these demands are that transformations are occurring in what is produced in goods and services, how they are produced and delivered and even in who are the producers. Therefore, the concurrent demands for new attitudes, behaviours, organisations, technologies and skills and skill formation needs

to be understood in terms of new market and socio-economic pressures.

These pressures require action-oriented responses. They will not go away. Nor will there be a return to a traditional stable state. Innovations in post-school skill formation are increasingly being viewed as a critical organisational response to these pressures.

CONCURRENT AND INTEGRATED ORGANISATIONAL TRANSFORMATIONS

To meet the above challenges, innovative organisations have developed a diversity of integrated strategies to foster responsive workplace cultures (see diagram 3). That is, they have integrated innovations in work organisation, innovations in technology, innovations in skill formation and innovations in employee commitment, participation and remuneration. To do this, such organisations have beem concerned to continually develop multifunctional and multiskilled workforces.

The outcome of such integrated innovation is the further blurring, fusing and shifting of traditional organisational boundaries and roles. Such changes are occurring as organisations seek to develop and maintain a dynamic comparative advantage. Consequently, enterprises are developing unique technocultures. That is, they are developing organisational specific technologies, work organisations, skill formation and employee relations.

It is clear that such concurrent integrated transformations will continue into the foreseeable future. They will not be resolved by traditional custom and practice or legal precedents.

An important example of innovation in the development of responsive technocultures is the negotiation of co-operative development programs. These provide organisational stakeholders with coherent experiences in meeting present and future

challenges. The Development Program on New Technology, Working Life and Management in Sweden is an example of such an innovation in union-management co-operation.**

The experiences of such co-operative development programs highlight how the understanding of changes in skills and skill formation can develop from sharing the processes of development.

** See Bo Oscarsson, Olle Hammarstrom, Goran Karlsson, Rolf Lindholm. A New World of Work: The Development Programme. The Swedish Work Environment Fund, Stockholm, 1988.

6. TRANSFORMATION OF ORGANISATIONS, ORGANISATIONAL PHILLOSOPHIES, WORK ORGANISATION AND ORGANISATIONAL RELATIONS

INTEGRATED TRANSFORMATION OF ORGANISATIONS

A central driving force in the transformation of organisations is the world wide demands for continual improvement in Quality environments, employment, products and services. Such integrated quality improvement is being achieved in diverse organisations that have developed quality responsive cultures. Such cultures recognise the need for integrated innovations in work organisation, technology, skill formation and employee commitment, participation and remuneration (see diagram 4). Examples of such organisations abound in Japan.

In quality conscious societies, people are becoming more concerned about the quality of their built, natural and working environments. The increasing concern for health and safety is both internal and external to the workplace. It relates to concerns for work organisation, skill formation and career development. Therefore employee and industrial relations are becoming increasingly concerned with the holistic systems needed to deliver quality environments, employment, products and services.

Many organisations facing skill shortages do so because they cannot attract people to to work in the organisation. The availability of skilled workers in a community does not mean that their skills will be available to any organisation. 14

RESPONDING TO MARKET/SOCIETAL DEMANDS

The need to develop dynamic responsive enterprise cultures is further reinforced by the need to meet critical concurrent shifts in market and societal demands. These include shifts from emphasis on:

Quantity to Quality
Production to Productivity
Consumption to Conservation
Stability to Incremental Improvement

(see diagram 5)

Such shifts challenge not only traditional organisational behaviour, but methods of assessing competencies, roles and responsibilities. To cope with such concurrent changes, there is an increasingly recognised need to reconceptualise and restructure the roles of production and service employees. They are being required increasingly to be responsible for the quality of organisational responses. This, in turn, requires reconsidering their skills and skill formation. For example, one Japanese steel maker recruits its basic process workers from the academic stream because of the perceived need for conceptual skills.

CROSS-CULTURAL DEMANDS FOR NEW INDIVIDUAL AND ORGANISATIONAL BEHAVIOUR

Individuals and organisations operating in dynamic environments (service and employment markets) are being required to meet new market and consequently behavioural criteria. These are not the result of ideological or political doctrines. (Although some political groups may place great emphasis on particular criteria). They result from previously illustrated contemporary contextual pressures on organisations in the mature economies.

Among these critical behavioural criteria are:

- adaptability and flexibility,
- commitment and competence,
- co-operation and competition,
- accountability and responsiveness.

(see diagram 6)

(Such criteria are contradictory to the concerns of traditional control based organisations. They are also partly contradictory to the concerns of many traditional engineering based organisations.) To meet these criteria, some organisations have developed innovative learning and participative based work organisations. Such changes highlight the interaction of human resource and other organisational strategies. A wide range of such organisations participated in the Swedish Development Program in New Technology, Working Life and Management.

It is important to emphasise that, however, demands for more flexibility often fail to realise that flexibility is not an independent variable. It is only one criteria of a broader, dynamic industrial culture. Therefore, unless there is a change in the culture, cries for more flexibility are more likely to sustain traditional conflicts rather than resolve them.

ORGANIZING WORK FOR ADAPTATION, LEARNING, INNOVATION AND PRODUCTIVITY

The previous observations illustrated the need for transforming work for adaptation, learning, innovation and productivity.

This requires diverse innovations in traditional workplace organisational and learning processes.

Examples of such innovations are:

- Organisational Role Rotations Across Functions and Skills
- Organisational Sharing of Information and Learning
- Organisational Small Group Activities and Projects
- Organisational Processes for Participation

(see diagram 7)

The above examples illustrate the increasing multifunctional role of work organisation and the shift away from many of the control assumptions inherent in some national engineering, managerial and union work practices. A critical question therefore in the development of new work organisations, is how to put knowledge into production and service systems so that it is shared and developed rather than divided or narrowly controlled?

To achieve these changes, however, will require the development of a broad based skilled, integrated, utilised and committed workforce.

The development of such a skilled workforce is a central objective of workplace restructuring. In traditional work organisation, such a skilled workforce would more than likely be under utilised and under committed. This has resulted in much negative analysis based on concepts such as the overeducated worker.

Another important objective of the developments in new work organisation and learning is the reduction in downtime, particularly on new systems technologies. Reduction in downtime is becoming critical for maintaining an organisation's dynamic comparative advantage. This raises important skill questions in relation to technology transfer between and within nations and also between and within organisations. There is a strong case for such questions to be addressed in the next phase of the O.E.C.D./C.E.R.I. Human Resource Project.

TRANSFORMATIONS OF ORGANISATIONAL RELATIONS: DEVELOPING A BROAD CO-OPERATIVE LEARNING NETWORK

The interdependent nature of modern industrial and service economies ensures that changes in one organisation are likely to be influenced by the relations both within the organisation and with other organisations. The stakeholders in an organisational change therefore, may include a wide variety of individuals and groups, (internal and external) such as:

- employees and sub-contractors
- customers and suppliers
- unions and industrial tribunals
- educational institutions

(see diagram 8)

Developing successful skill formation strategies, therefore, requires an understanding and responsiveness to broader organisational relations.

For example, the just-in-time organisational concept developed by Toyota in its home base in Japan requires a very sophisticated development of organisational relations. In the field of higher level skill formation, for instance, Toyota has developed the Toyota Institute of Technology to ensure that all organisations in the Toyota network, could develop the engineering skills necessary for continual integrated innovation.

Toyota's success is an example of an inward and outward responsive technoculture.

It is important therefore that we now look at some of the critical aspects of technological change that are stimulating innovations in work organisation and skill formation. However, it must be stressed again, that concepts of technological determination and technological fix are not valid propositions, particularly in sophisticated technological organisations.

7. TRANSFORMATION OF TECHNOLOGIES

CHANGING PRIORITIES FOR TECHNOLOGICAL INVESTMENT

The previously discussed market and society changes have considerably influenced the changing priorities for technological investment. The more successful service enterprises are changing technologies, particularly information technologies, to help concurrently improve:

- Quality Production, Service and Environment
- Adaptation, Innovation and Reliability
- Communication, Information and Integration
- Quality Learning and Working Environment

(see diagram 9)

That is, technological investment is increasingly socio-technical investment. The traditional simple cost cutting or labour saving assumptions about technological investment are inappropriate for evaluating the influence of modern technological investment. Market leaders are more likely to invest in technology to concurrently improve the quality of employment, environment, product and service. This, in turn, requires investment in broadening the development of employees, particularly production and service employees who produce and deliver the product or service. An excellent example of such

integrated investment is Volvo's new high tech engine plant at Skova in central Sweden. Volvo established the Volvo Technical High School to ensure that appropriately skilled people were available for the operation of the new plant.

CONCURRENT INTER-RELATED SHIFTS IN TECHNOLOGICAL DEVELOPMENT

The market/societal demands have also changed the assumptions underlying advanced developments in technologies. The mass standardised forms of technology are being replaced by more customised market related forms of technology. Consequently, there are integrated shifts in technological design emphasis from

- Hardware to Software
- Dedicated to Adaptable
- Rigid to Flexible
- Autonomous to Systems
- Standardised to Customised

(see diagram 10)

These concurrent inter-related changes in technologies are influenced by and in turn, influence changes in work organisation and skill formation.

FUSION AND INTEGRATION OF TRADITIONAL TECHNOLOGIES

Innovation by fusion and integration of technological knowledge is challenging the traditional technological lines of skills demarcation. (e.g. mechatronics, the fusion of mechanics and electronics, has been an important operating technology in Germany and Japan for over a decade.)

These new technologies are further blurring, fusing and shifting traditional organisational boundaries and roles. Therefore, attempts by managements and/or unions to maintain traditional Tayloristic employment classifications and occupational systems are likely to result in loss of employment and skilling opportunities.

These fundamental changes in technology raise fundamental questions about the appropriate skills of existing employees, as well as new recruits. This is resulting in many organisations reconsidering and reconceptualising their traditional roles in skill formation. This is an important incentive for institutional and other providers of skill formation and employing organisations to co-operate more closely than in the past. This applies to initial skilling, added skilling, cross skilling and updated skilling.

It is therefore appropriate that we now turn to discuss the notion of skill formation.

EMERGING CONCEPTS OF SKILL FORMATION
ROLE REQUIREMENTS FOR COMPLEX AND CHANGING WORK ENVIRONMENTS

In their responses to dynamic and complex internal and external environments, innovative organisations are increasingly concerned to recruit and develop adaptive employees. These people are expected to operate within broad roles rather than clearly demarked jobs or tasks. This is particularly important in organisations that are concerned to achieve continual incremental improvement and innovation, rather than the traditional aim of stability. This applies to innovative manufacturing and service enterprises.

Traditional concepts of training have been predominantly developed to equip people for clearly demarked jobs and tasks in stable systems. However, service oriented competitive organisations are concerned to develop people for employment in dynamic innovative systems.

This shift from job and task orientation to role orientation is particularly significant for production and service employees. It requires the development of a wide range of skills traditionally not expected or developed among non-managerial employees. These skills may include:

- Coping with non-routine events;
- Participating in group activities,
- Making decisions and accepting responsibility,
- Operating within complex systems.

(see diagram 12)

The above skills have not been part of most traditional enterprise training for operation level employees. Therefore, how they are best developed is still an important question in many advanced organisations. However, as organisations become more aware of these skill gaps, there is an increasing recognition of the need for innovation in skill formation. Such innovations include developing appropriate learning based work organisation, supported by appropriate on-the-job and off-the-job learning. However, what is appropriate is often a function of the desired enterprise culture and the existing institutions and traditions.

DIVERSE PROCESSES FOR CO-OPERATIVE RECONSTRUCTION, LEARNING AND DEVELOPMENT

In diverse and dynamic environments, there are no ideal models. However, learning based work environments need to be related to the particular needs of individuals, groups and organisational cultures.

Learning based organisation cultures visited during the project included some or all of the following processes:

- Information sharing
- Participative research
- Participative projects
- Consultation/Negotiation

(see diagram 13)

The above action-oriented participative processes support improvements and innovation in skill formation for managers, employees and union officers. They support also a change in the role requirements of more highly qualified employees. Such people may be required to develop supportive roles, such as tutors, sharing their knowledge and skills. Such tutorial role needs to be recognised for further skill development and career purposes.

This is an important but often implicit aspect of Japanese enterprise renumeration systems.

Also, in Japan, for example, engineers formally and informally share their knowledge with less technically educated employees. This results in a dynamic skill mix in enterprise operations over time and the possibility of changing organisational roles. This is central to the development of a dynamic comparative advantage in many large Japanese industrial organisations. It is also central to successful Japanese experiences of total quality control, quality control circles and just-in-time systems.

The desired outcome of the above organisational changes is the development of adaptive, multiskilled individuals, groups and organisations.

INTEGRATING HARD AND SOFT SKILLS

There has been a tendency in industrial training in many countries to concentrate on hard skills (e.g. technical), particularly in apprenticeship. On the other hand, many behavioural scientists are prone to concentrate on soft skills (e.g. behavioural). However, with increasing service orientation in both industrial and service enterprises, organisations are finding it is desirable to integrate hard and soft skills; to integrate knowledge and competence, and to integrate theory with practice. Examples of such integrations are:

- product knowledge with market competency
- value knowledge and cultural competency
- industrial knowledge and organisational competency
- technical knowledge and operational competency

(see diagram 14)

These integrations are necessary as service-oriented organisations push responsibility for cummunicating, consulting, explaining, negotiating and participating to frontline employees. The traditional skills fragmentation inherent in the dichotomy of staff and line responsibilities is fast disappearing in responsive market oriented organisations.

The outcome of these developments is the emergence of 'New Balance of Skills' in organisations and societies. This has important implications for institutions involved in preparing people for the world of work. The increasing concern for the quality of basic education, for example in the United States, can be clearly linked to the enterprise perceptions of their needs for an overall upgrade in their balance of skills.

In organisations that are searching for human resource strategies to sustain their dynamic comparative advantage, there is an emerging conceptual shift from concern for the appropriate division of labour, to concern for the appropriate balance of skills.

CRITICAL ISSUES FOR INDIVIDUALS AND ORGANISATIONS

The shift from concepts of formal and institutionalised training to broad processes of skill formation raises important issues for research, consultation and negotiation. The project revealed increasing management and union concerns for the following issues:

- Accreditation and transferability of skills
- Skilling for devolution of responsibility
- Skilling for workplace redesign and restructuring
- Skilling for mobility and security.

(see diagram 15)

These issues are providing opportunities for the development of new forms of action-oriented participative research. In a dynamic environment, the involvement of the stakeholders in the research allows them to apply the knowledge as it is developed. However, it is clear that only a few unions have the internal resources to actively be involved in such studies. The Swedish and German unions are generally better equipped in this respect. However, many of their large research staff are locked into maintaining traditional systems requirements.

Such co-operative, participative research may change the role of traditional groups - for example, consultants change to process support, rather than controllers of knowledge and delivers of written reports. Therefore, they are more appropriately designated as organisational consultants rather than management consultants. Their new role is to support the development of a process and the needs of all the stakeholders involved in the process. This is best seen in a number of programs supported by the Swedish Work Environment Fund.

Finally, workplace and skill restructuring is a continuous process. It will not be aided by developing new divisions of labour either nationally or internationally. Therefore, in dynamic environments, lead organisations are finding it is increasing necessary to develop diverse processes to support continual multiskilling. Thus, it is important to address the complex questions of multiskilling.

9. MULTISKILLING

A NECESSITY AT ALL LEVELS OF AN ADAPTIVE ORGANISATION

Multiskilling is still a relatively new concept. It is still a relatively under-developed concept. Much of the current discussions in countries such as Australia, concentrate on multiskilling of traditional tradespersons.

However, this is a narrow, technologically-oriented view of multiskilling. Multiskilling is more appropriately conceptualised and developed in terms of the needs of people and organisations facing continually changing environments.

Therefore, multiskilling needs to be understood in terms of previously discussed interdependent transformations in organisations, work organisations, technologies and skill formation.

Multiskilling involves technical, functional, role and organisational skills (see diagram 16). It is more than just horizontal skilling between trades. It must include vertical skilling, to handle more complex situations and technologies. It must include diagonal skilling, to allow people to move to different skills at different levels of knowledge, as they are reskilled for new roles, situations and technologies.

These are new complex industrial relations issues that require considerable ongoing action-oriented research. Unfortunately, in traditionally centralised industrial relations systems such as Australia, few organisations (management or union) have the appropriate human and organisational resources available for such research.

Multiskilling is becoming essential for individuals, groups and organisations that wish to be responsive to emerging and future opportunities. Maintenance of traditional skill boundaries will not, in the long run, preserve jobs or organisations.

Multiskilling can also be an important contribution to the reconceptualising and restructuring of policies and programs aimed at providing economic and social safety nets.

Cliches such as "jack of all trades and master of none" may have been appropriate to traditional trade-based employment. However, they now tend to hinder rather than help discussions on skills and skill formation.

RELATING SKILLS TO FUSION, INTEGRATION AND SYSTEMS INNOVATION

The trend to multiskilling is closely related to fusion, integration and systems innovation in organisational technocultures. The one dimensional, one directional focus on innovations is being challenged by the fusion and integration of enterprise knowledge and strategies. For example, changes in skill requirements may relate to

- fusion, hybrid and systems technologies
- composite materials
- fusion and integration of organisational functions
- integrated products and services.

(see diagram 17)

The above highlights the potential complexity of multiskilling and the need to develop adaptive skill formation and industrial relations processes to support horizontal, vertical and diagonal multiskilling.

Multiskilling and adaptive skill formation processes are becoming critical to individual and organisational strategies for the mastery of fusion, integration and systems innovation. Practices which endeavour to maintain narrow functional and skill boundaries are only reducing adaptation and therefore future employment opportunities.

Multiskilling relates to long term changes in client expectations, organisational behaviour, science and technology. This represents a significant cultural shift for many organisations. Such a shift requires supporting organisational investment to help stakeholders understand the complex changes and develop new organisational, occupational and workplace cultures.

KEY BENEFITS FOR INDIVIDUALS AND ORGANISATIONS

Multiskilling is still a controversial issue in some O.E.C.D. countries. It challenges many traditional customs and practices. It challenges many traditional statuses and values, particularly those of craft-based unions. However, it it is being viewed increasingly as having benefits for individuals and organisations facing dynamic environments. These benefits include:

- improved adaptability and security
- improved learning and career opportunities
- improved mastery of new systems technologies
- improved employment and market opportunities.

(see diagram 18)

These shared benefits are seen as improving both communication and commitment.

The desired outcome of multiskilling is therefore to improve functional, organisational, role and technical competencies. These improvements in turn, place further pressures on the providers of skill formation.

It is appropriate therefore, now to turn to the implication of these developments for the providers of skill formation.

10. HUMAN RESOURCE STRATEGIES

THE DYNAMIC ADVANTAGE.

There was a perception in most of the organisations visited, that human resource strategies are central to developing and maintaining a dynamic comparative advantage.

"We can all get the same technology" or "new technology will only give us a short temporary advantage" were typical of statements heard during the research. Many of these organisations were developing innovations in skill formation as a central human resource strategy to maintain their dynamic comparative advantage.

However, there is considerable cross cultural diversity (organisational and national) in the development of human resource strategies. These are related to the diversity of organisational business ideas, organisational cultures and technocultures, other organisational strategies and internal and external environments.

RESPONDING TO CONCURRENT AND DIVERSE MARKET DEMANDS.

As organisations become more informed and perceptive of the diversity of market demands, there is an increasing tendency to focus on the inadequacies of their traditional employment and training systems. The concurrent market demands for customisation, variety, reliability, precision, communication, service, improvement and innovation are placing pressure on organisations to review their "Balance of Skills" (see diagram 19).

To develop a more dynamic balance of skills, organisations are perceiving the need to develop cohesive, committed multiskilled employees. The appropriate human resource strategy to respond to this challenge varies significantly with organisational and national cultures.

RESPONDING TO CONCURRENT AND DIVERSE ORGANISATIONAL PRESSURES

Enterprises are being forced to focus their human resource strategies also on a wide range of other related concurrent changes and innovations. These include:

- shortening lead times and product life cycles;
- technological innovations;
- organisational innovations;
- changing social expectations;
- demographic change.

(see diagram 20)

For example, in countries such as Sweden, Germany and Japan there is a significant decline in the number of school leavers available for employment, promotion blockages due to the baby boom generations reaching middle age and the increasing aging of their work forces.

The diversity of these demands and pressures further reinforce the need for coherent holistic organisational strategies. This often requires organisations and industries to reconceptualise their human resource strategies. The pressures on human resources in the hospitality and tourist related industries (e.g. airline systems) emphasises this point,

particularly the introduction of the new mega information systems.

11. RESERVE SKILL CAPACITY

RESPONSE TO CONTINUOUS INTERRELATED PRESSURES

In dynamic external and internal environments, organisations are being required to continuously adapt and innovate. Can "the lean organisation" meet the medium and long term needs of such dynamic markets and organisations?

There are emerging cross cultural organisational concerns about the need to develop organisational and national skill capacities to respond to concurrent improvements and innovations in technology, production, products and service, increasing costs of organisational delays and down times, increasing costs of underskilled employees and the increasing costs of delays in entering new markets (see diagram 21). Given the decreasing life cycles of products, these increasing costs could result in loss of present and future organisational opportunities.

The diversity, pace and pervasiveness of these changes highlights the short term perspective of the concept of the lean organisation, and raises questions about its adaptability and viability in a dynamic marke[illegible] The concept of a 'reserve skill capacity' is preferred by some organisations, particularly Japanese, to provide a "just in time" response to diverse challanges and to develop and maintain their dynamic comparative advantage.

The development of such a reserve skill capacity requires human resource strategies that integrate skill formation, skill utilization, skill maintenance and career development. That is, the integration of employment and learning systems. If this is not adequately done, then skills will be lost by disuse or employee turnover.

12. JUST-IN-TIME

DIVERSITY OF SKILL REQUIREMENTS

John Maynard Keynes in his classic treatise on "The General Theory of Employment, Interest and Money" highlighted the power of ideas. The idea of "Just-in-Time" developed within the Toyota Corporation after World War 11 continues to increase its influence in manufacturing and service industries. However, its implications for skills and skill formation appears to be inadequately understood outside of Japan.

To support a just-in-time organisational philosophy Toyota has built up an impressive network of skill formation systems. These provide skills formation for Toyota and its affiliated and associated organisations but also provide support smaller supplier organisations. A just-in-time system is as strong as its weakest link. It requires commitment and competence from all the people and organisations in the network. It requires reducing down times, increasing quality, meeting reductions in tolerances, providing and responding to innovations, adapting to new products and processes, absorbing new technologies and more. The members of the just-in-time system therefore not only need to develop individual and group skills as well as production and technical skills; but also sophisticated systems and trouble shooting skills to avoid delays and down times, and inter and intra organisational learning to ensure the synergism of the system.

Unfortunately many organisations still view just-in-time from the narrow perspective of manufacturing and the supply and delivery of materials. However, the concept of just-in-time will continue to broaden and increase its influence, particularly in relation to the service sectors.

A good example of how just-in-time concepts have helped reconceptualise and restructure a non-manufacturing industry can be found in the redevelopment of the Rotterdam container ports. This has led to innovations in the use of information technology and skill formation. Computer competency is now being developed for all full time employees in the European Container Terminal.

The significance of just-in-time for skill formation will be the subject of further analysis in a later presentation. However, its relevance for the relation of on-the-job and off-the job learning is particularly important for providers of skill formation. It is also very relevant to providers of skill formation as they face increasing pressures from product, service and skill markets. The chief executive of one international training group in Boston vividly explained the increasing demands on them for what amounted to a constant 'total quality control' and 'just-in-time' response from their clients. This related to the urgent research, design and delivery of customised products in very dynamic and competitive international markets.

13. **PROVIDERS**

SHIFTING CLIENT FOCUS

From discussions with providers and their clients in the public and private skill formation systems, it is clear that there is a shift in client focus and demands. The traditional strong focus on individual career development is now competing with organisational demands for skill formation support for organisational strategic repositioning, socio-technical transfers and workplace and organisational restructuring (see diagram 23). To these can be added government demands for industrial restructuring in many O.E.C.D. countries.

All this confirms the need for suppliers to develop just-in-time responses in terms of research, development and delivery of customised skill formation.

In many public systems of technical and further education, this is resulting in conflict between the forces of tradition and the forces of change.******

*** see T.A.F.E.S. Strong Tradition Based Technocultures and T.A.F.E.S. Twelve Essential Conceptual Shifts - forthcoming.

CHALLENGES OF CLIENTS DIVERSE DEMANDS

The clients of skill formation services are not only shifting the focus of their demands but they are also challenging providers with a diversity of concurrent demands. These include:

- demands for quality;
- demand for customisation and innovation;
- demand for a strategic focus;
- demand for speed and urgency

(see diagram 24)

These concurrent demands relate to the client's search for a dynamic comparative advantage.

The outcome of this is that increasingly providers of skill formation face the market demands of their clients. This in turn, is shifting the balance of authority in the development of skill formation programs.

14. INSTITUTIONAL PROVIDERS

RECONCEPTUALISING AND RESTRUCTURING ROLES

The changing skill formation markets is forcing many institutional providers to reconceptualise and restructure their roles. This became apparent in my studies of organisations in California's Silicon Valley in the early 1980s.

Their possible new innovative roles may include:

- developers of learning programs and resources;
- managers of these learning programs;
- developers of skill formation networks;
- skill formation consultants and managers.

(see diagram 25)

This will require them to shift institutional investment priorities from away from traditional emphasis on bricks, mortar and technological hardware to the development of staff and systems resources.

15. CONCEPTS IN TRADITION

The O.E.C.D./C.E.R.I. cross cultural projects on human resource developments have highlighted some important emerging conceptual and operational shifts in skill formation.. However, the pace and pervasiveness of these shifts varies considerably between and within the participating countries. Key shifts are:

from	to
labour markets	skills markets
division of labour	balance of skills
education & training	skill formation
skill demarcation	skill integration
fragmentation	fusion & integration
stable systems	incremental innovation
on-the-job training	on-the-job learning
learning leave	learning time
skill structures	skill dynamics

These shifts have important policy and program implications for individuals, enterprises and governments.

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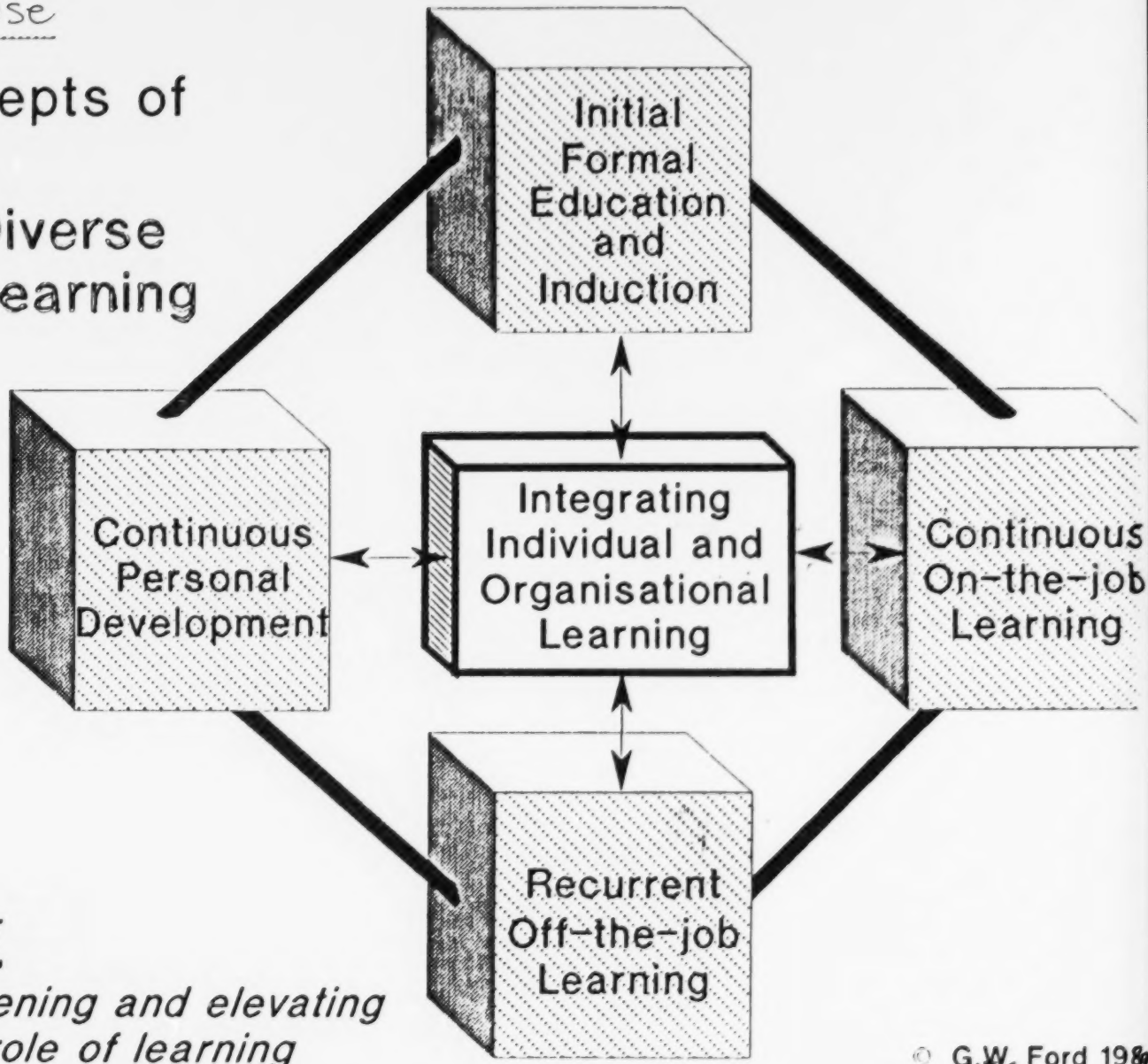
Emerging Concepts of Skill Formation Integration of Diverse Processes of Learning



DESIRED OUTCOME

- *Broadening, deepening and elevating the concept and role of learning*

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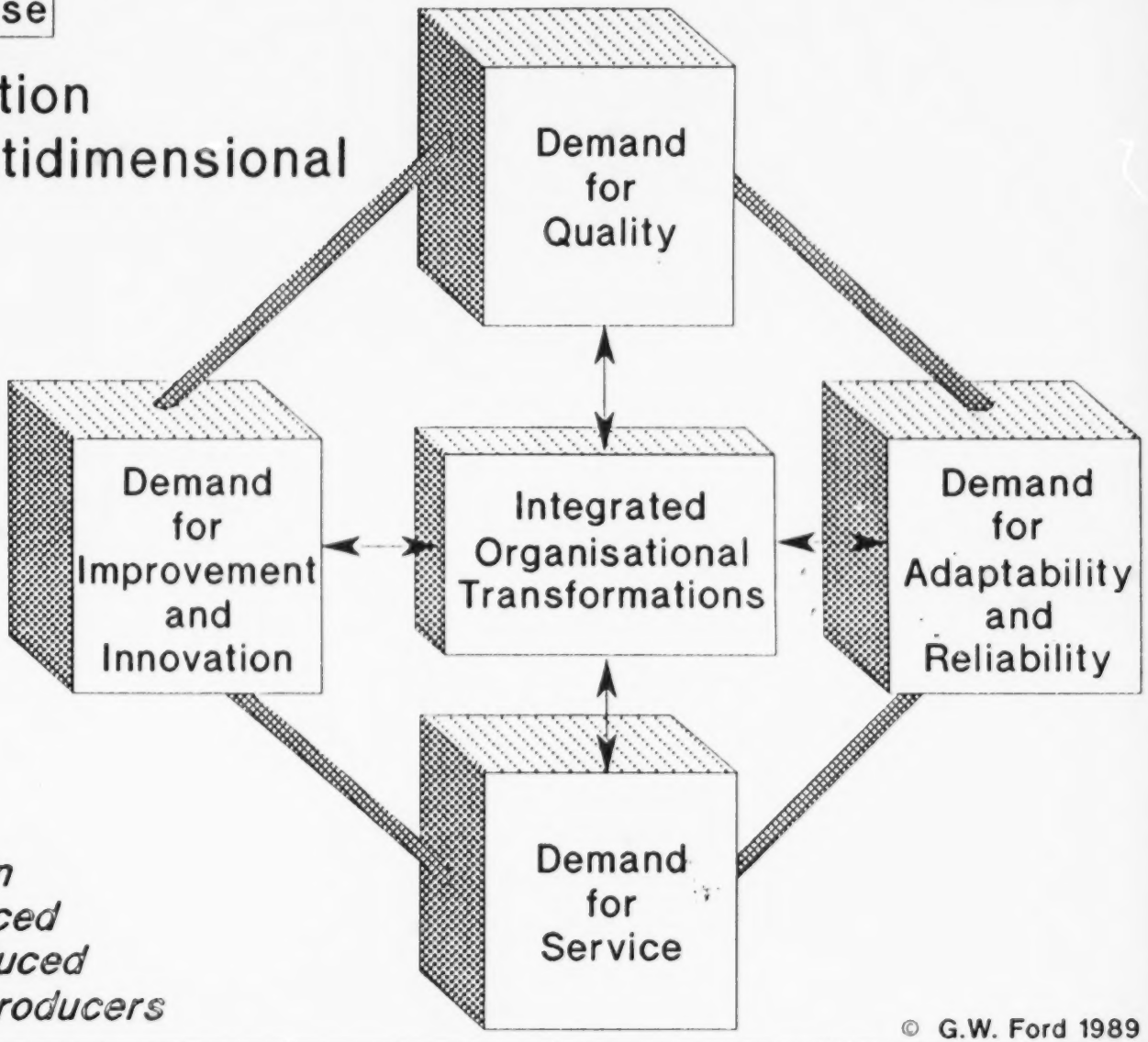
Internationalisation Concurrent Multidimensional Demands



OUTCOMES

- *Transformations in*
  - *What is produced*
  - *How it is produced*
  - *Who are the producers*

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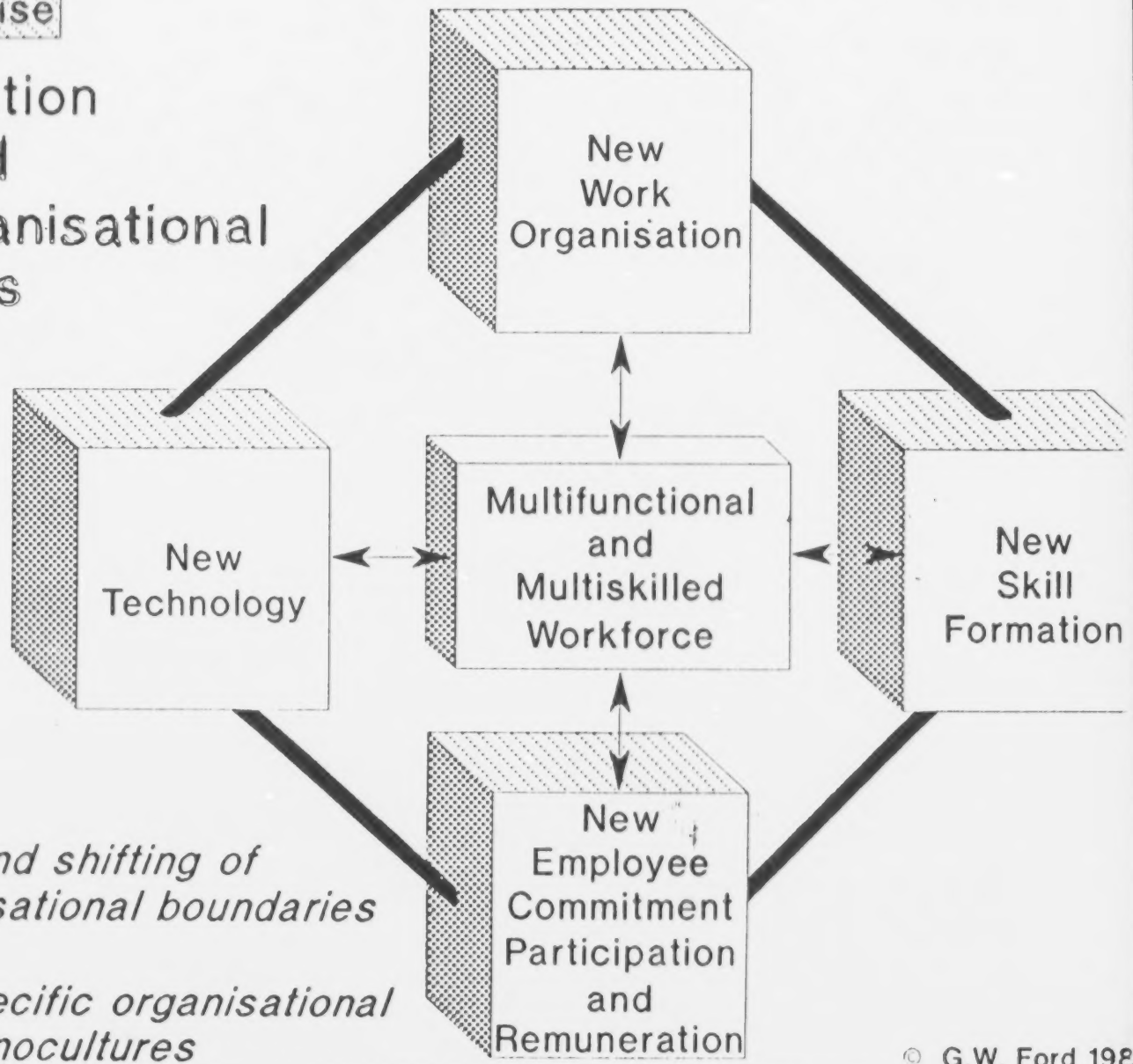
Internationalisation **Co**ncurrent and Integrated Organisational Transformations



OUTCOMES

- *Blurring, fusing and shifting of traditional organisational boundaries and roles*
- *Emergence of specific organisational and national technocultures*

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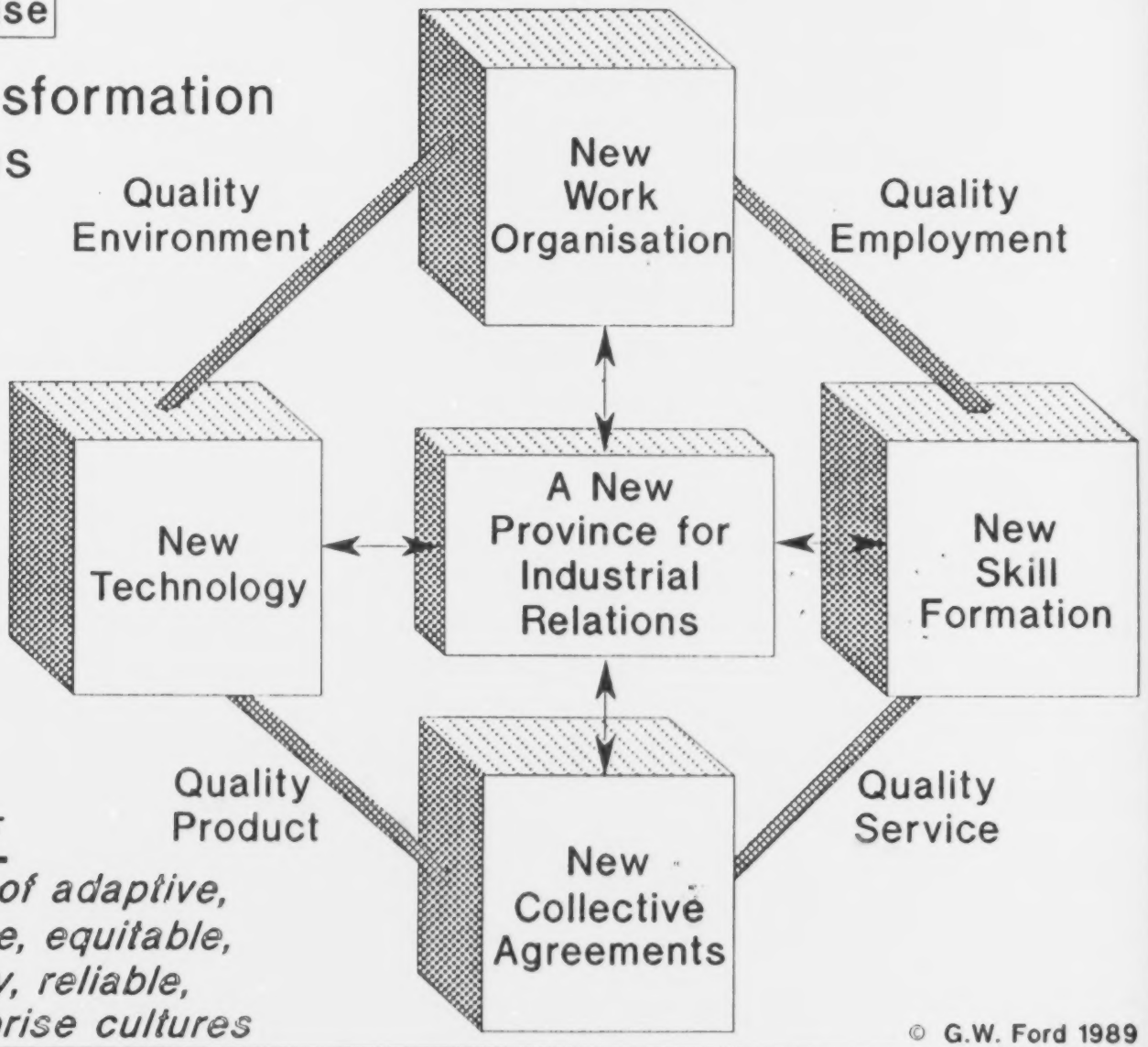
Integrated Transformation of Organisations



DESIRED OUTCOME

- *The development of adaptive, coherent, cohesive, equitable, productive, quality, reliable, responsive enterprise cultures*

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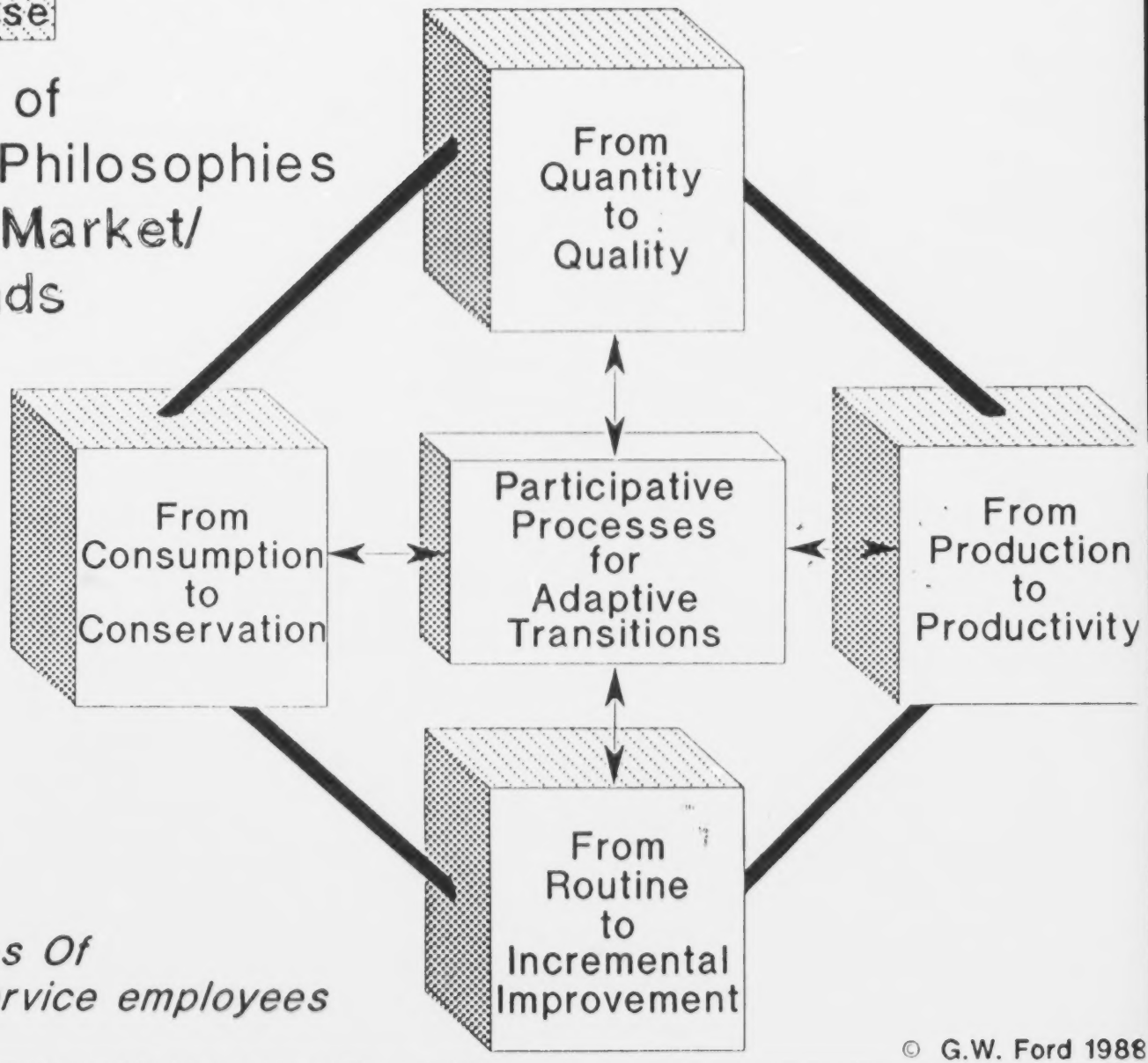
Transformation of Organisational Philosophies Responding to Market/ Societal Demands


From Quantity to Quality
From Consumption to Conservation
Participative Processes for Adaptive Transitions
From Production to Productivity
From Routine to Incremental Improvement

OUTCOMES

Broadening The Roles Of

- *Production and service employees*
- *Skill formation*

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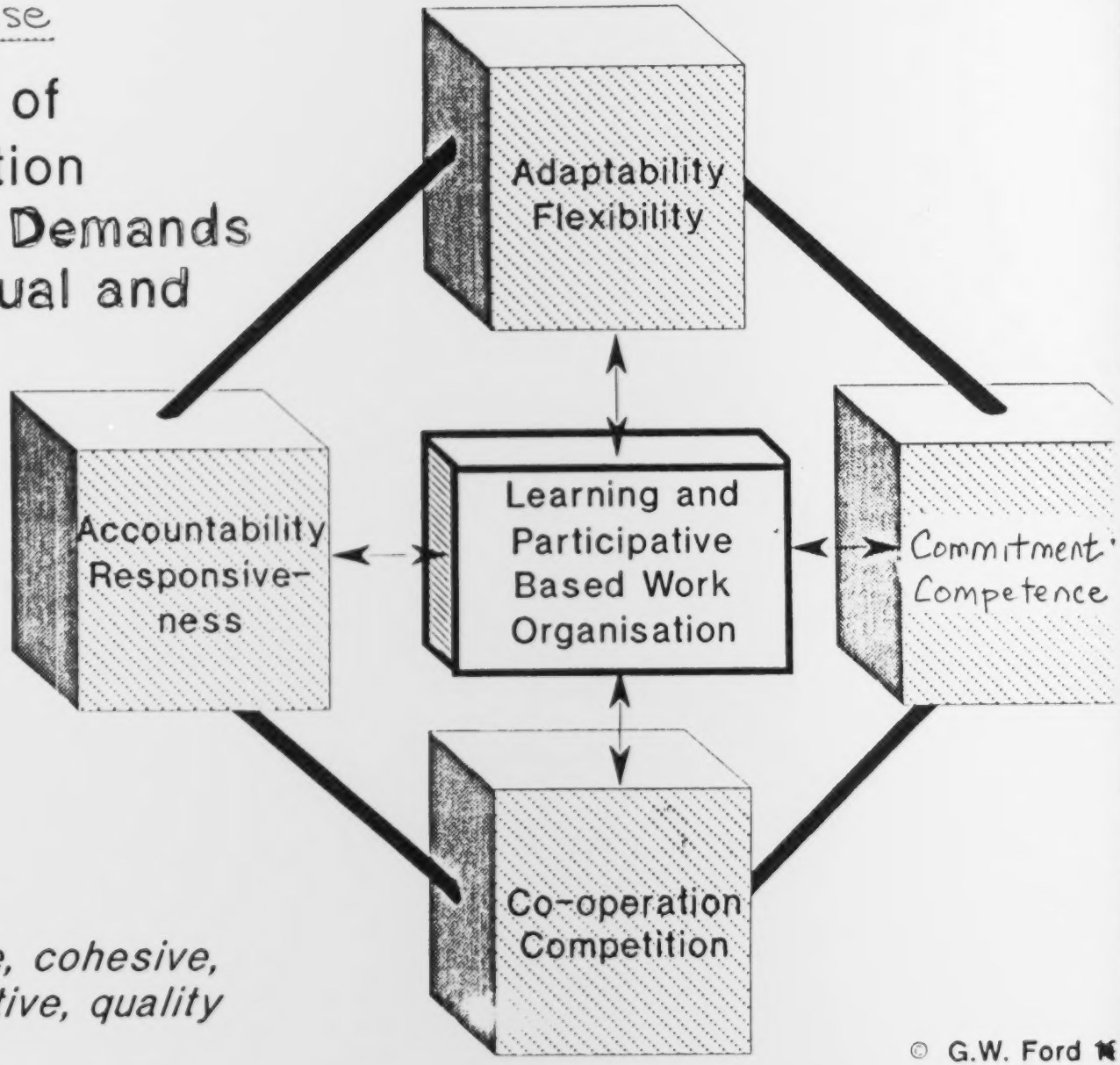
Transformation of Work Organisation Cross-Cultural Demands for New Individual and Organisational Behaviour



OUTCOME

- *Need for adaptive, cohesive, equitable, productive, quality service cultures*

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Transformation of Work Organisation Organising Work for Adaptation, Learning, Innovation and Productivity

Organisational Role Rotations Across Functions and Skills
Organisational Processes for Participation
Multifunctional Role of Work Organisation
Organisation Sharing of Information and Learning
Organisational Small Group Activities and Projects

DESIRED OUTCOMES

- *Broad based skilled, integrated, utilised and committed workforce*
- *Reduction in downtime on new systems technologies*

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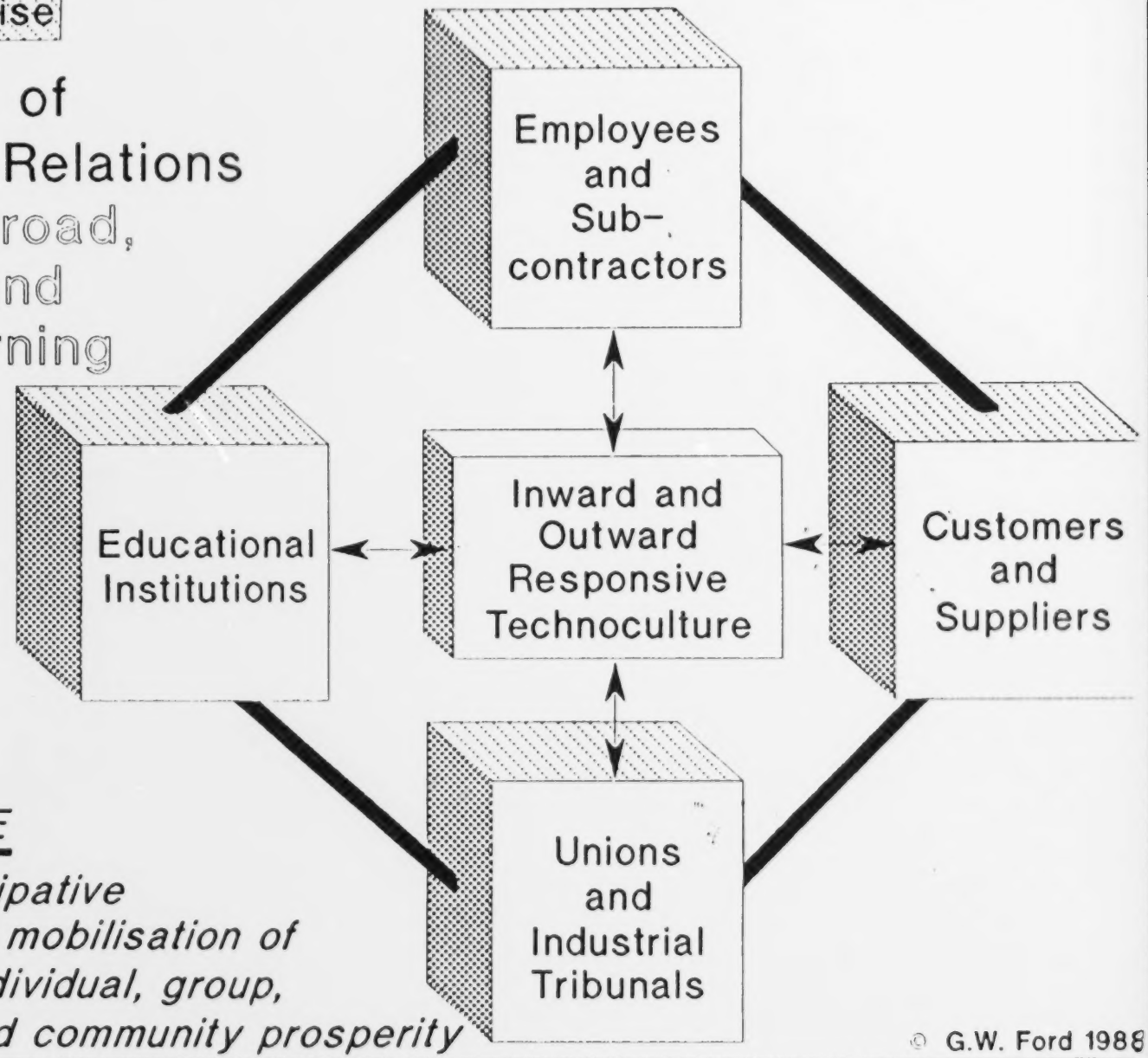
Transformation of Organisational Relations

Developing a Broad, Co-operative and Integrated Learning Network



DESIRED OUTCOME

- *Integrated, participative development and mobilisation of knowledge for individual, group, organisational and community prosperity*

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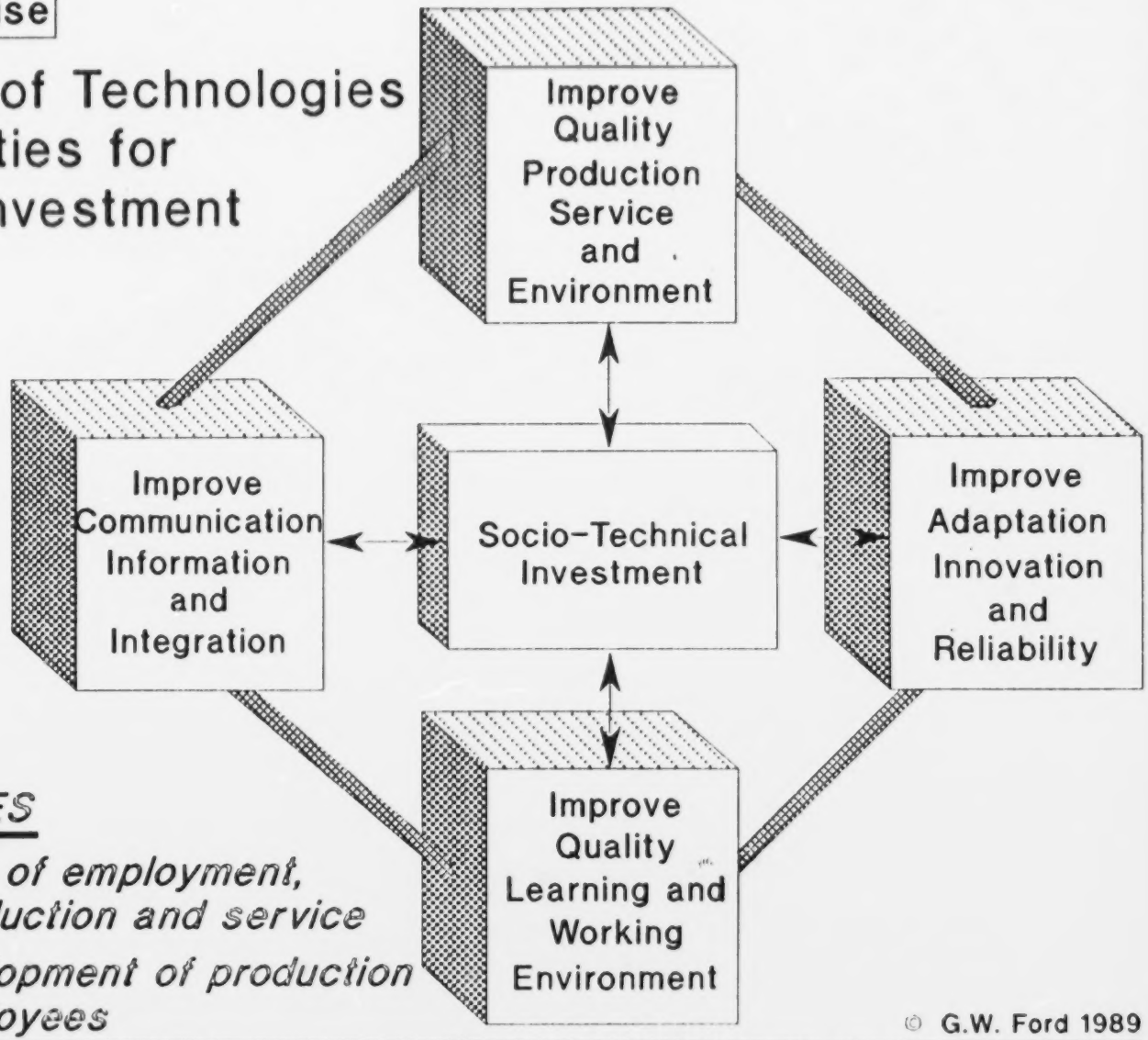
Transformation of Technologies Changing Priorities for Technological Investment


Improve Quality Production Service and Environment
Improve Communication Information and Integration
Socio-Technical Investment
Improve Adaptation Innovation and Reliability
Improve Quality Learning and Working Environment

DESIRED OUTCOMES

- *Improving quality of employment, environment, production and service*
- *Broadening development of production and service employees*

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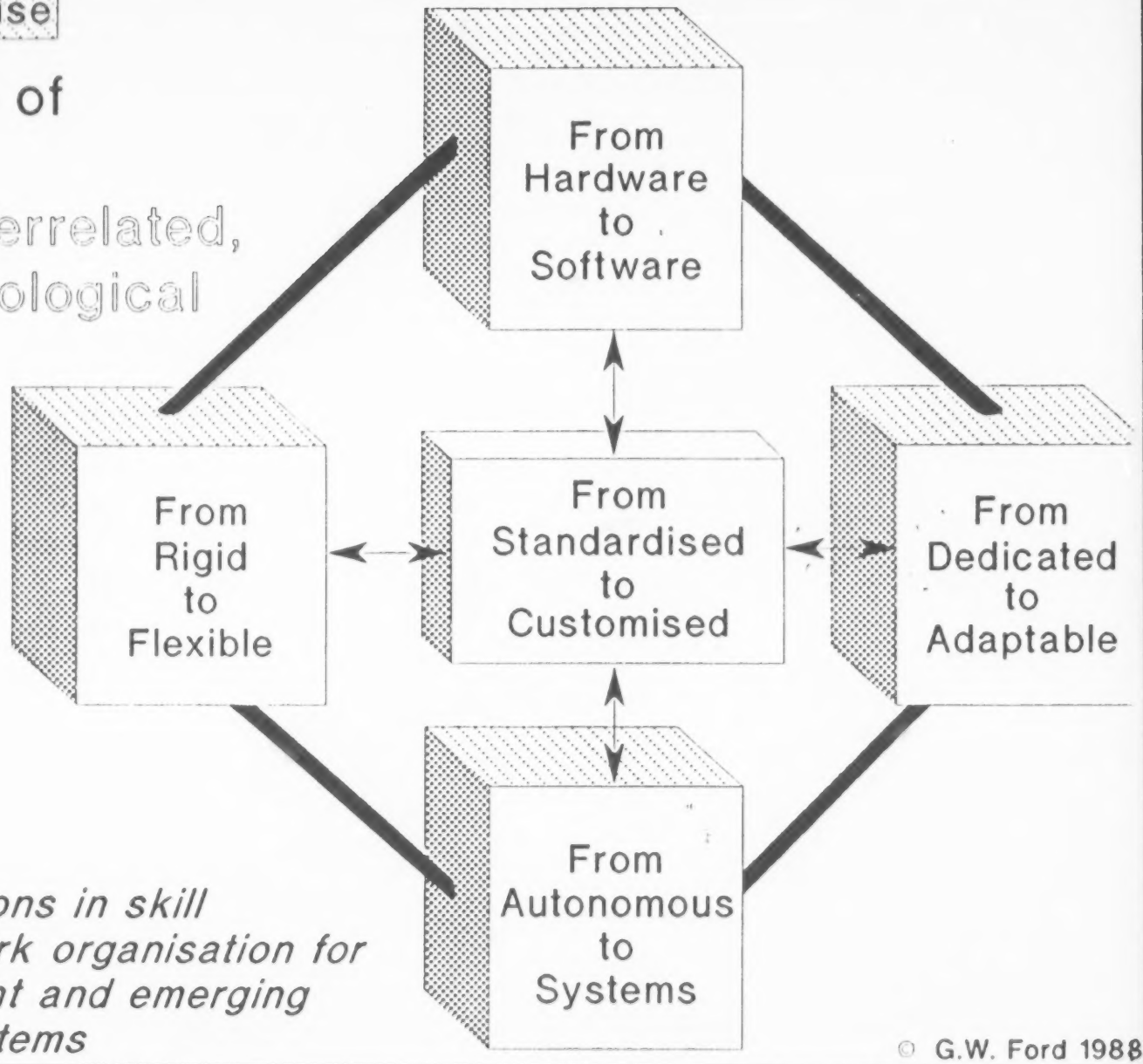
Transformation of Technologies

Concurrent, Interrelated, Shifts in Technological Development


From Hardware to Software
From Rigid to Flexible
From Standardised to Customised
From Dedicated to Adaptable
From Autonomous to Systems

OUTCOME

- *Need for innovations in skill formation and work organisation for mastery of current and emerging technological systems*

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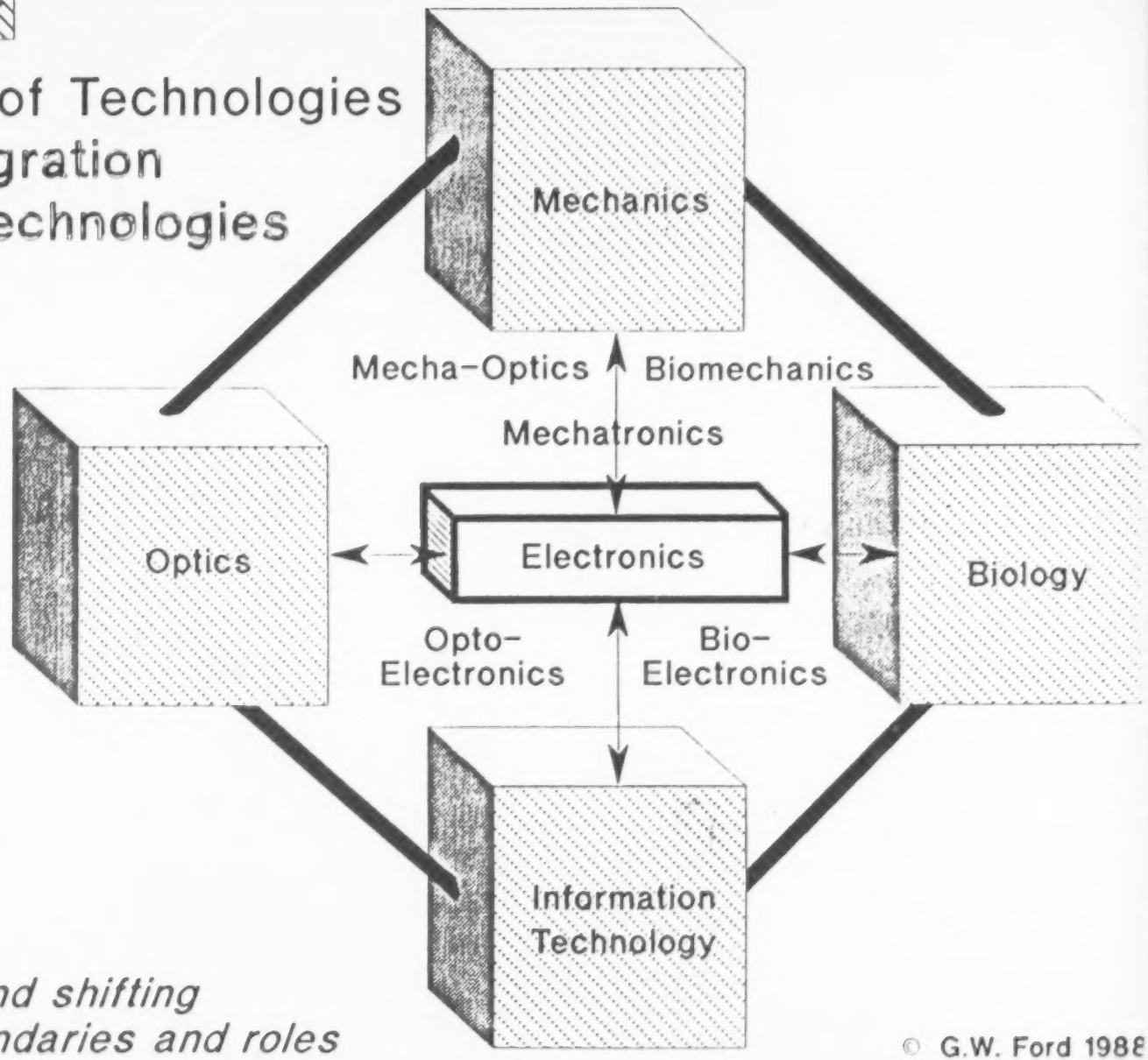
Technology Transfer

Transformation of Technologies
Fusion and Integration of Traditional Technologies



OUTCOME

- *Blurring, fusing and shifting of traditional boundaries and roles*

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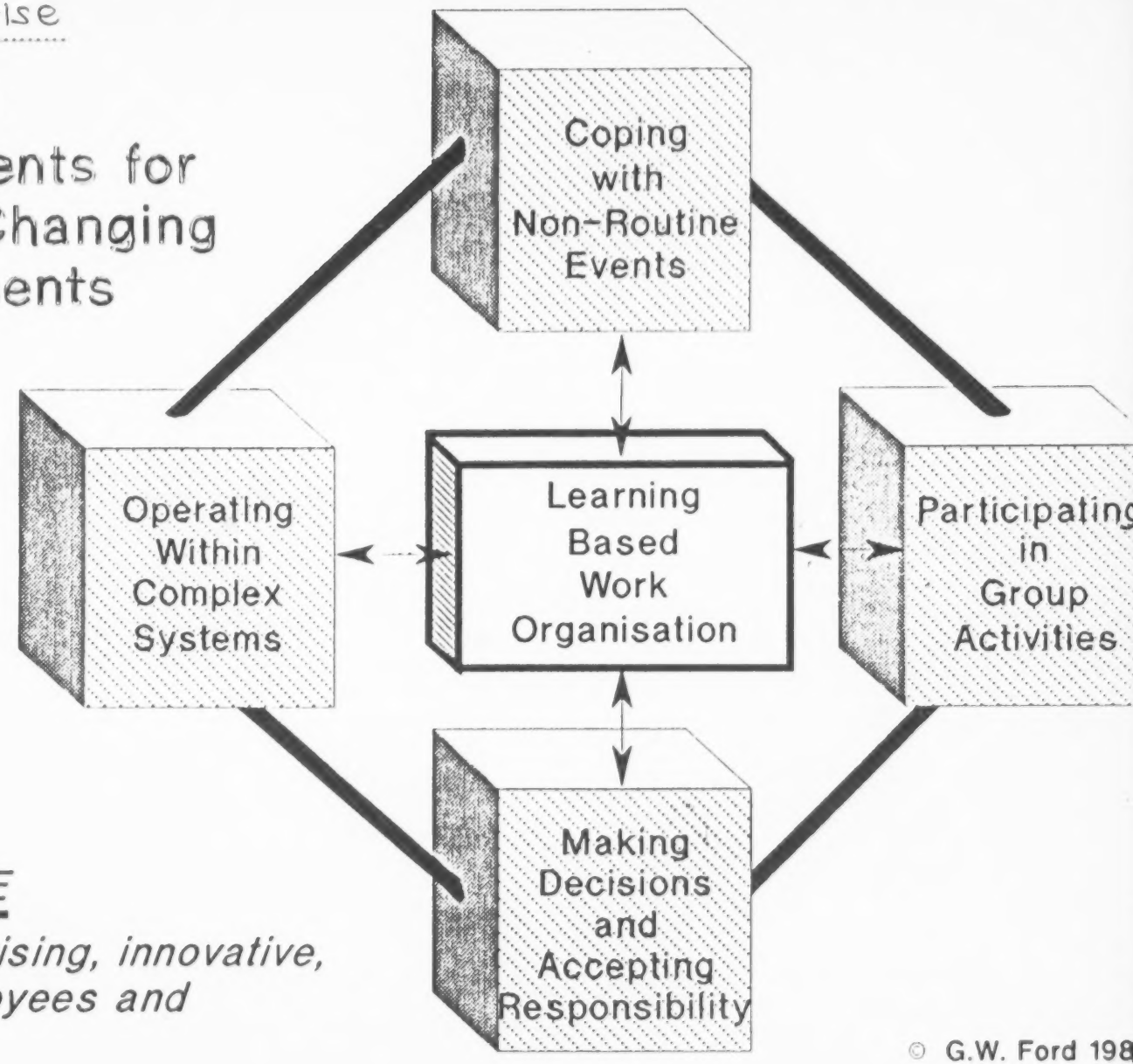
Skill Formation
Role Requirements for Complex and Changing Work Environments


Coping with Non-Routine Events
Operating Within Complex Systems
Learning Based Work Organisation
Participating in Group Activities
Making Decisions and Accepting Responsibility

DESIRED OUTCOME

- *Adaptive, enterprising, innovative, responsive employees and organisations*

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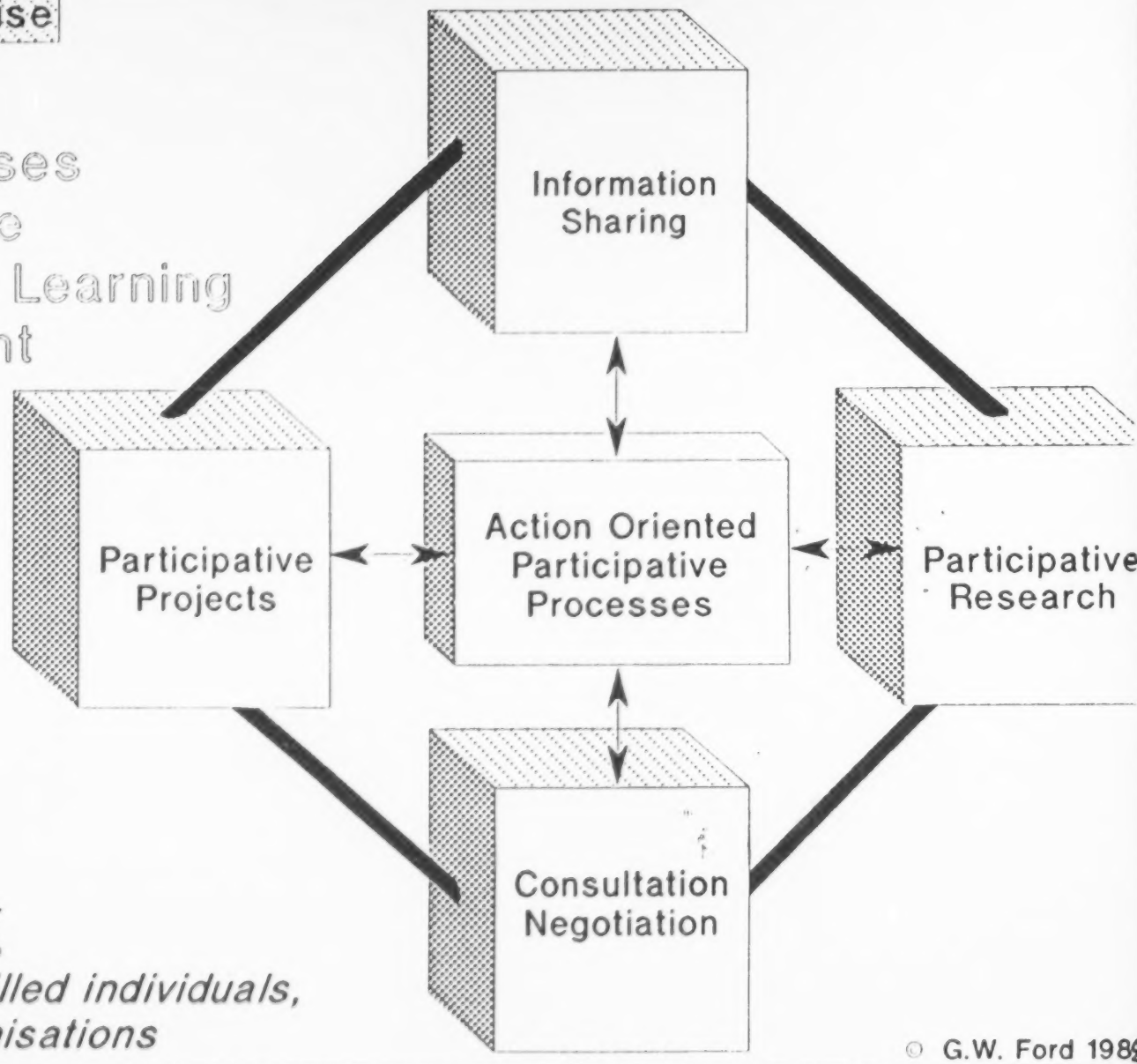
Skill Formation

Diverse Processes for Co-operative Reconstruction, Learning and Development



DESIRED OUTCOME

- *Adaptive, multiskilled individuals, groups and organisations*

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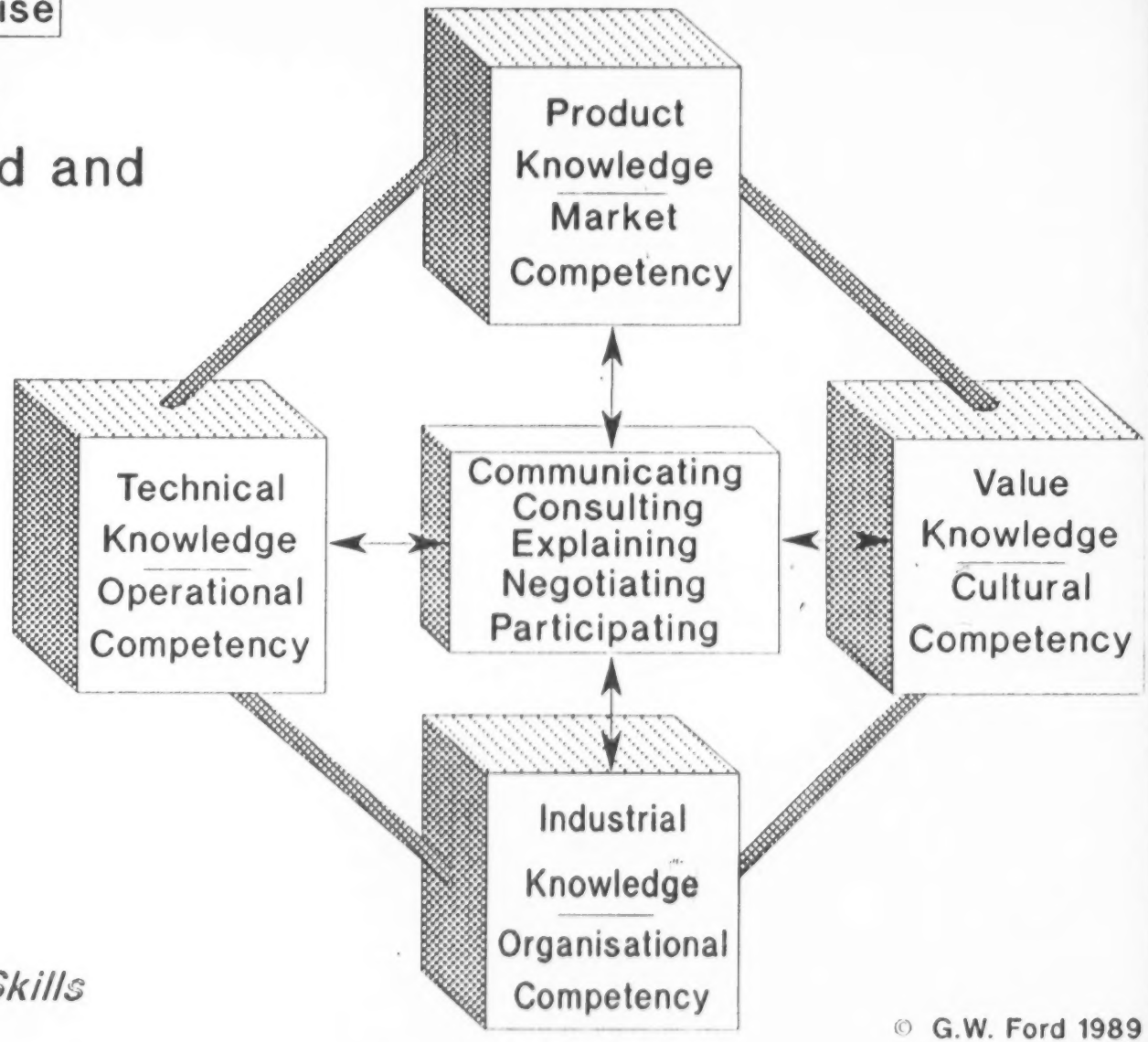
Skill Formation Integrating Hard and Soft Skills



OUTCOME

- *New Balance of Skills*

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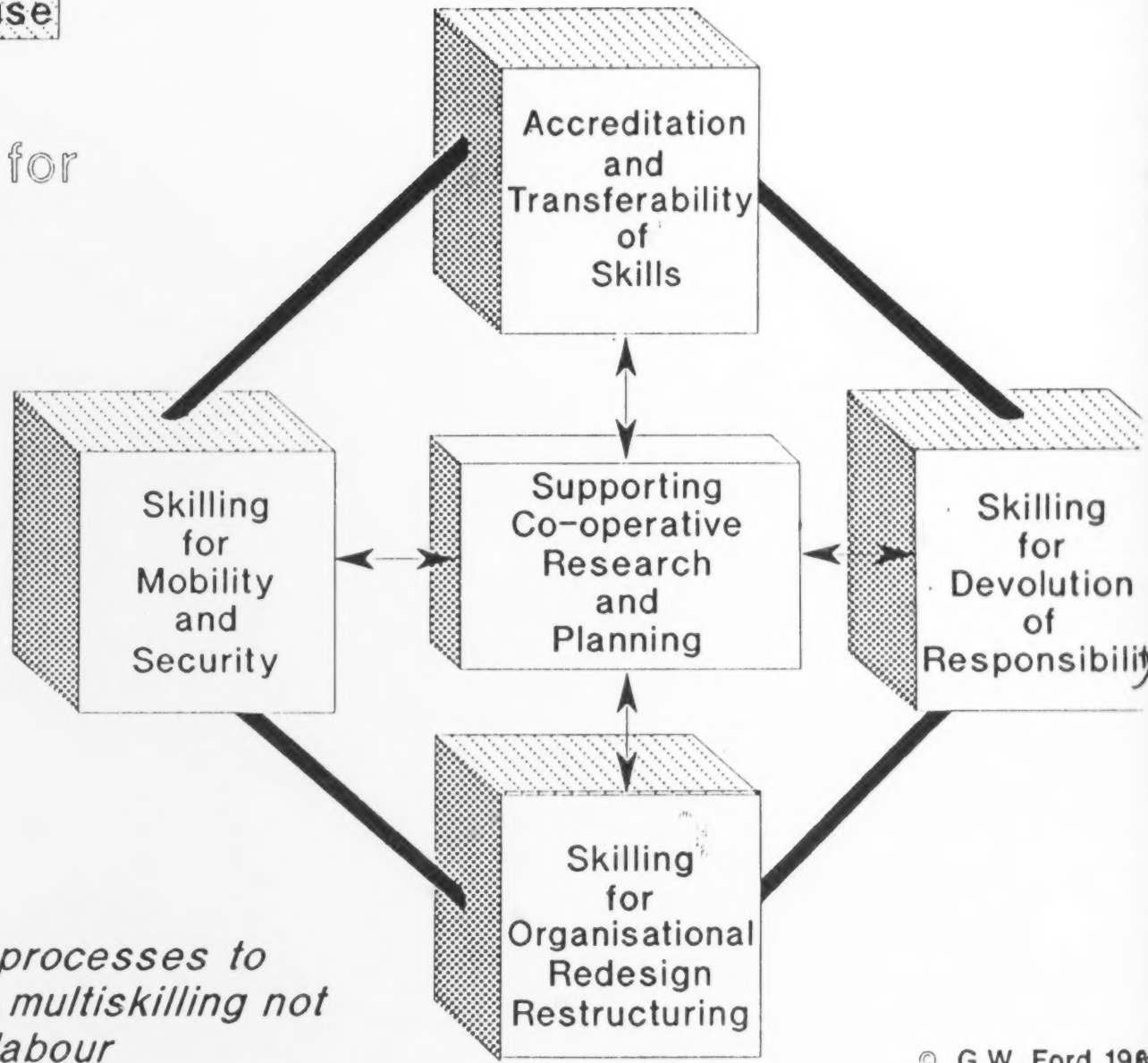
Skill Formation
Critical Issues for Individuals and Organisations


Accreditation and Transferability of Skills
Skilling for Mobility and Security
Supporting Co-operative Research and Planning
Skilling for Devolution of Responsibility
Skilling for Organisational Redesign Restructuring

OUTCOME

- *Need for diverse processes to support continual multiskilling not new divisions of labour*

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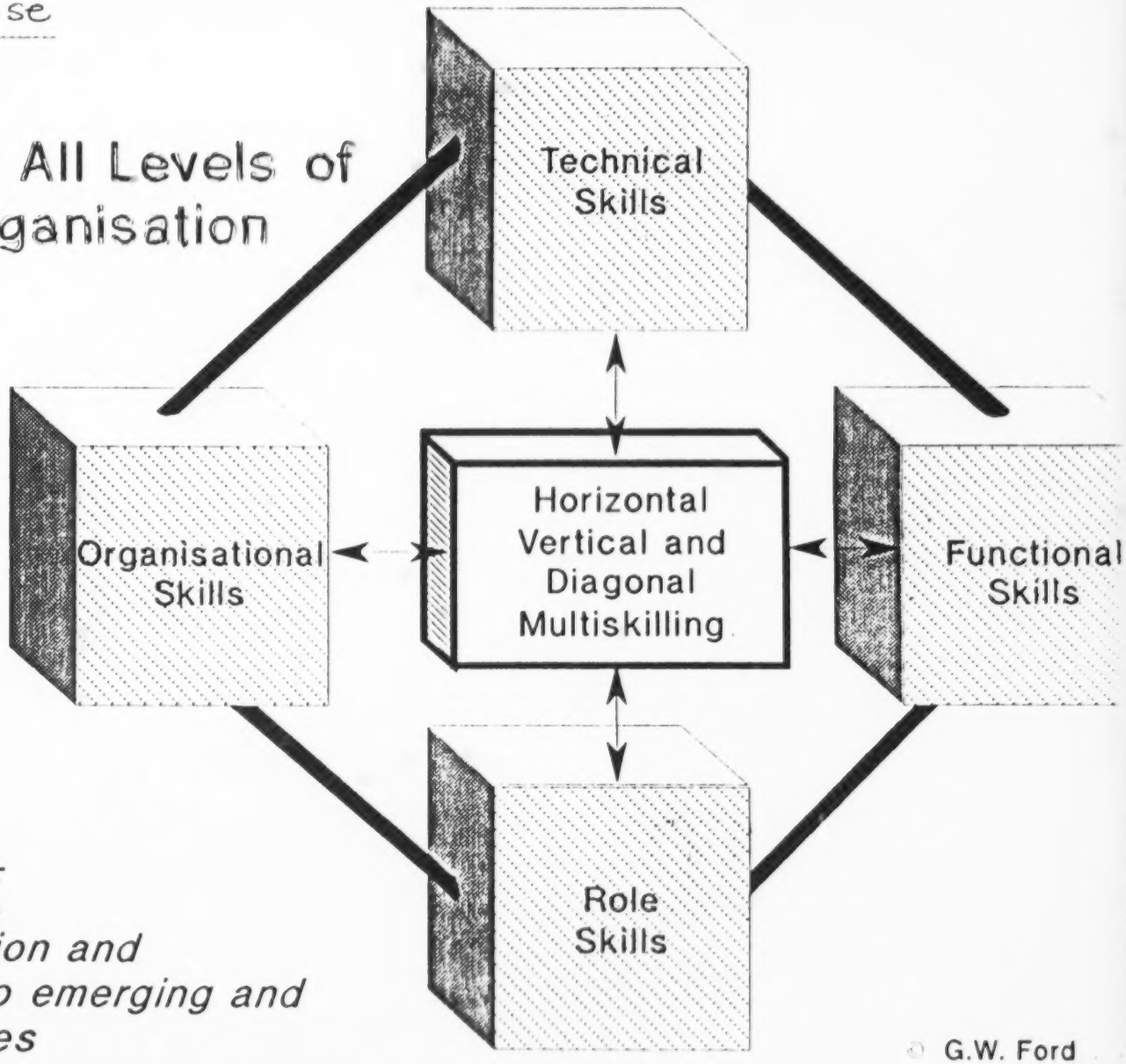
Multiskilling
A Necessity at All Levels of an Adaptive Organisation



DESIRED OUTCOME

- *Improved integration and responsiveness to emerging and future opportunities*

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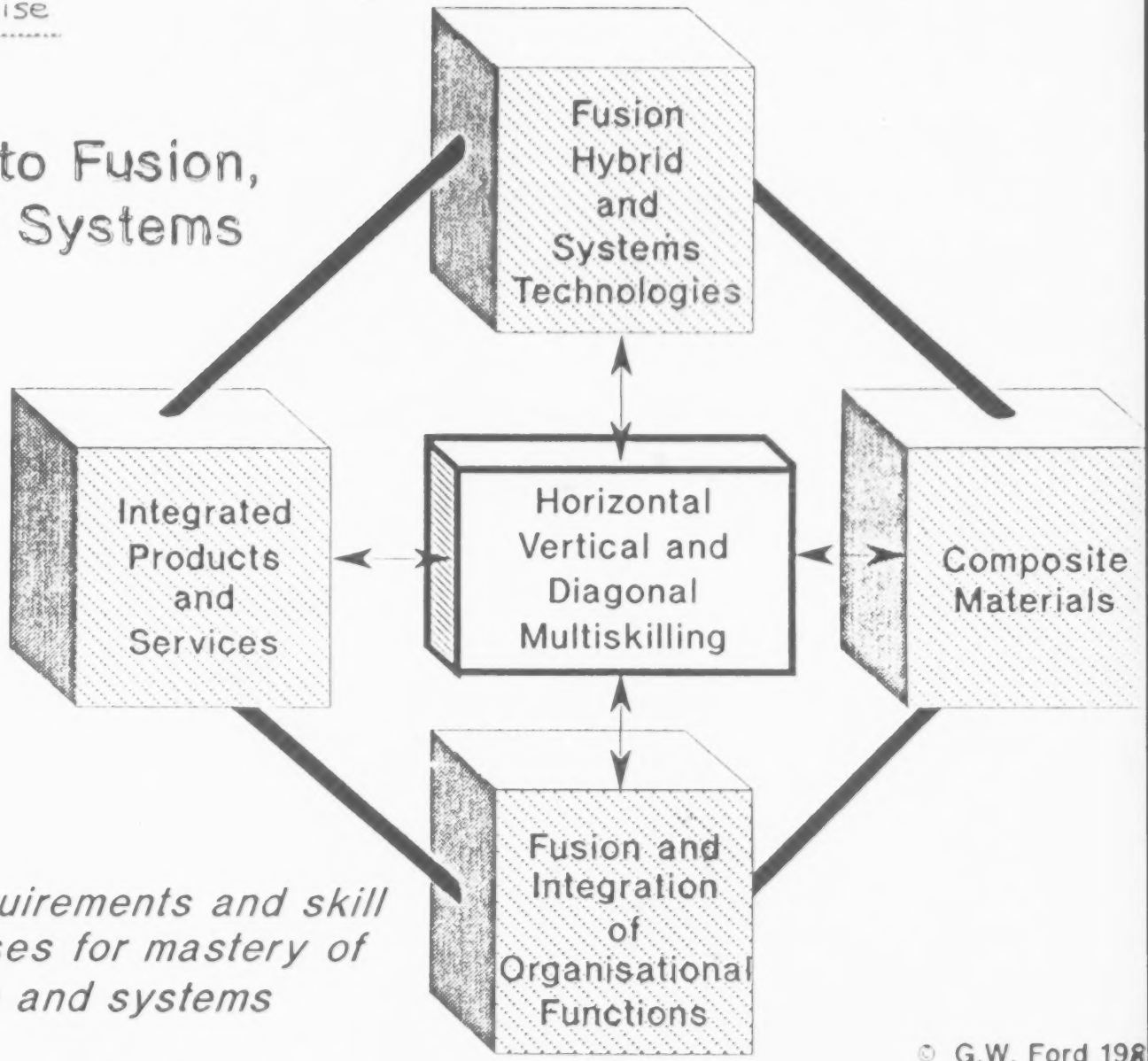
Multiskilling
Relating Skills to Fusion, Integration and Systems Innovations


Fusion Hybrid and Systems Technologies
Integrated Products and Services
Horizontal Vertical and Diagonal Multiskilling
Composite Materials
Fusion and Integration of Organisational Functions

OUTCOME

- *New multiskill requirements and skill formation processes for mastery of fusion, integration and systems innovations*

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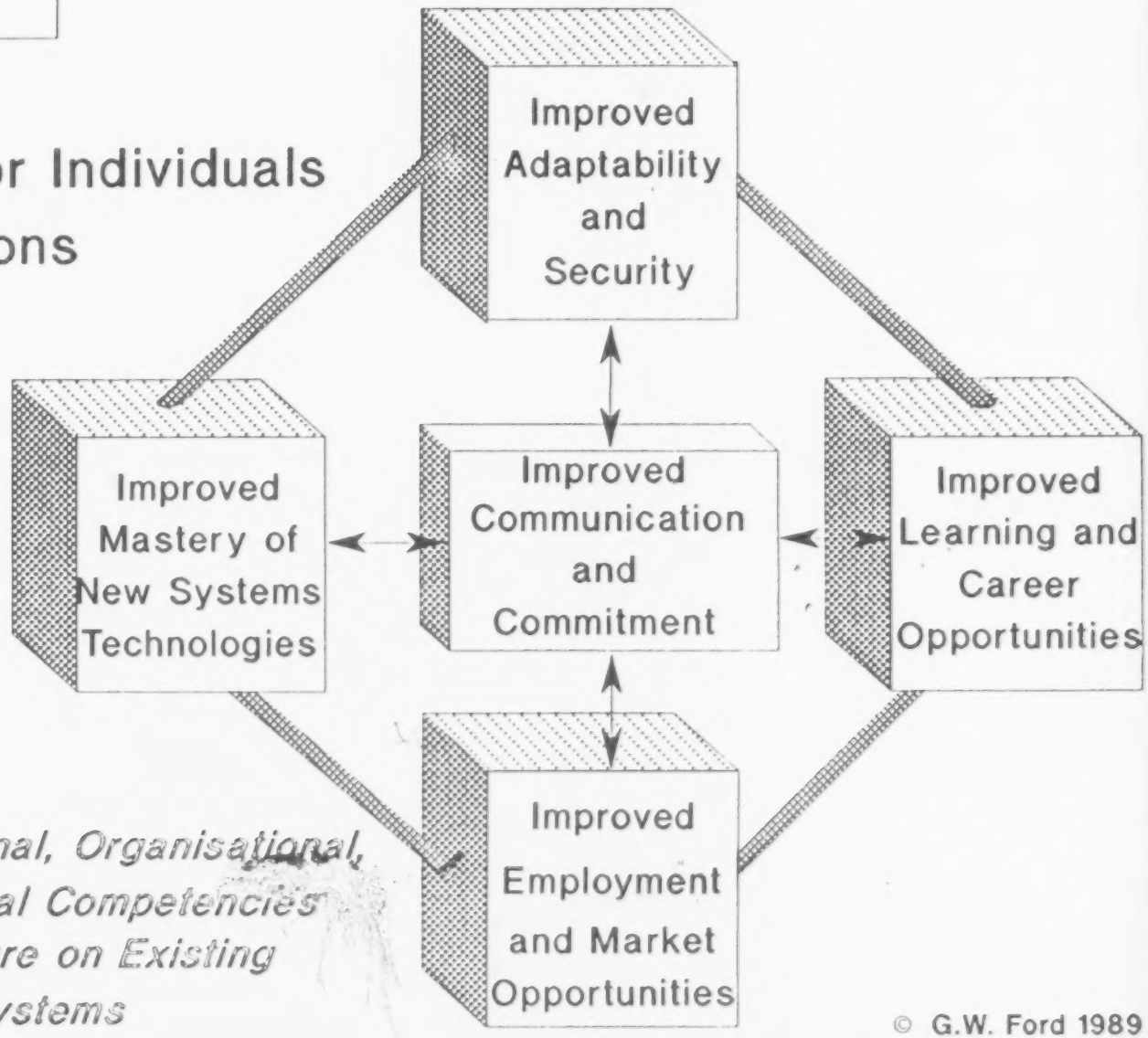
Skill Formation

Multiskilling
Key Benefits for Individuals and Organisations


Improved Adaptability and Security
Improved Mastery of New Systems Technologies
Improved Communication and Commitment
Improved Learning and Career Opportunities
Improved Employment and Market Opportunities

OUTCOME

- *Improved Functional, Organisational, Role and Technical Competencies*
- *Increased Pressure on Existing Skill Formation Systems*

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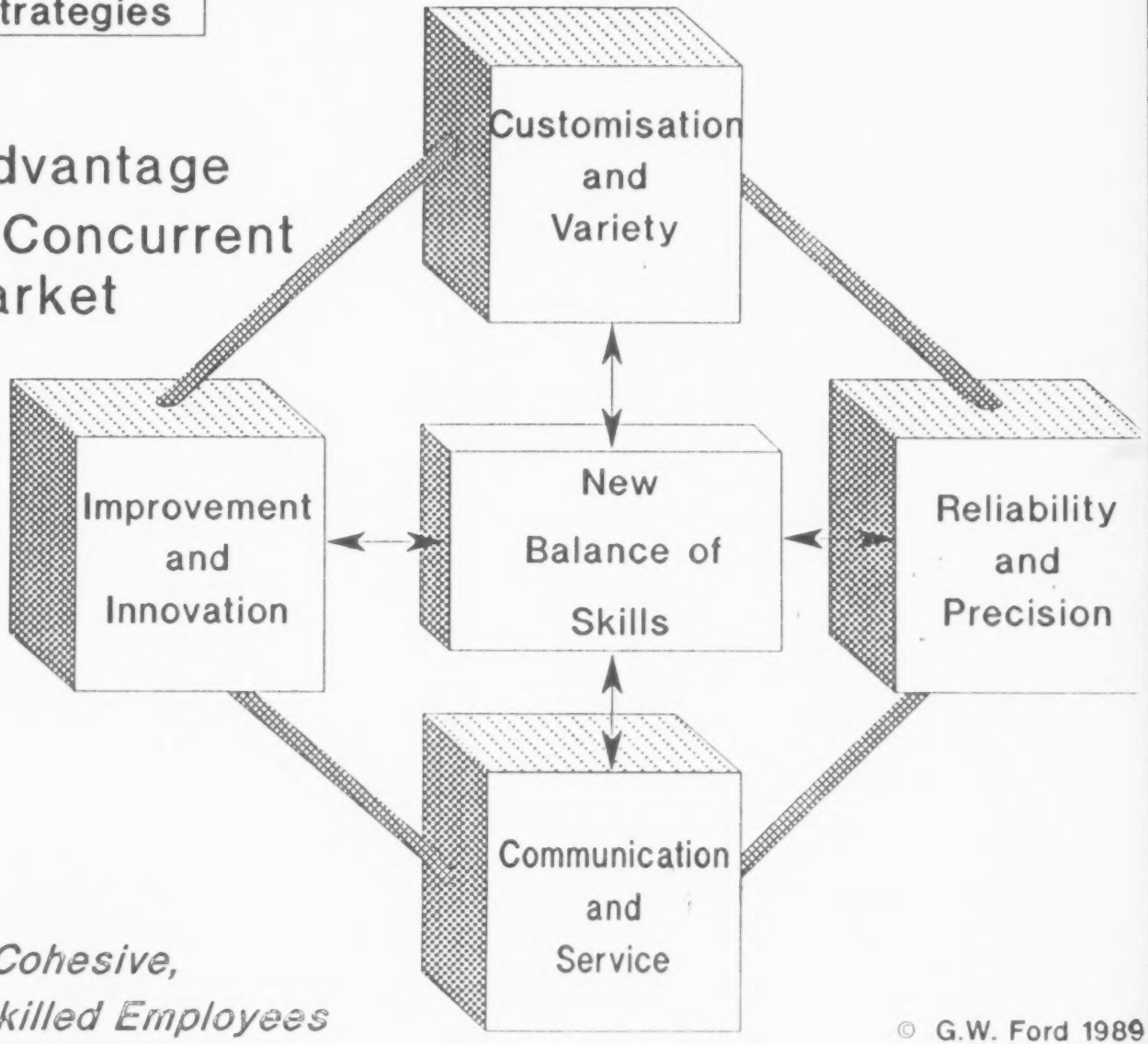
Human Resource Strategies

The Dynamic Comparative Advantage Responding to Concurrent and Diverse Market Demands



OUTCOME

- *Need to Develop Cohesive, Committed, Multiskilled Employees*

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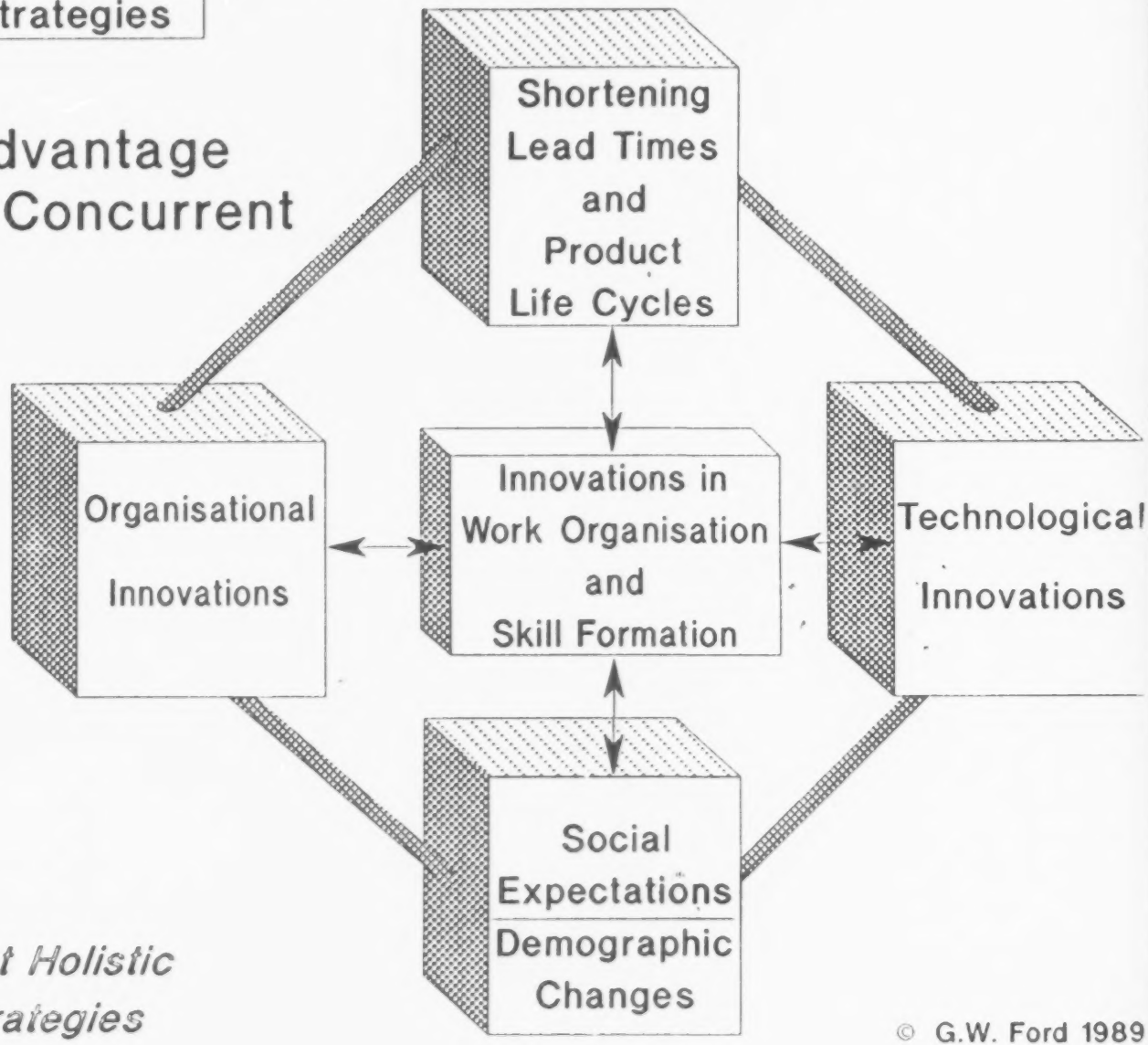
Human Resource Strategies

The Dynamic Comparative Advantage Responding to Concurrent and Diverse Organisational Pressures



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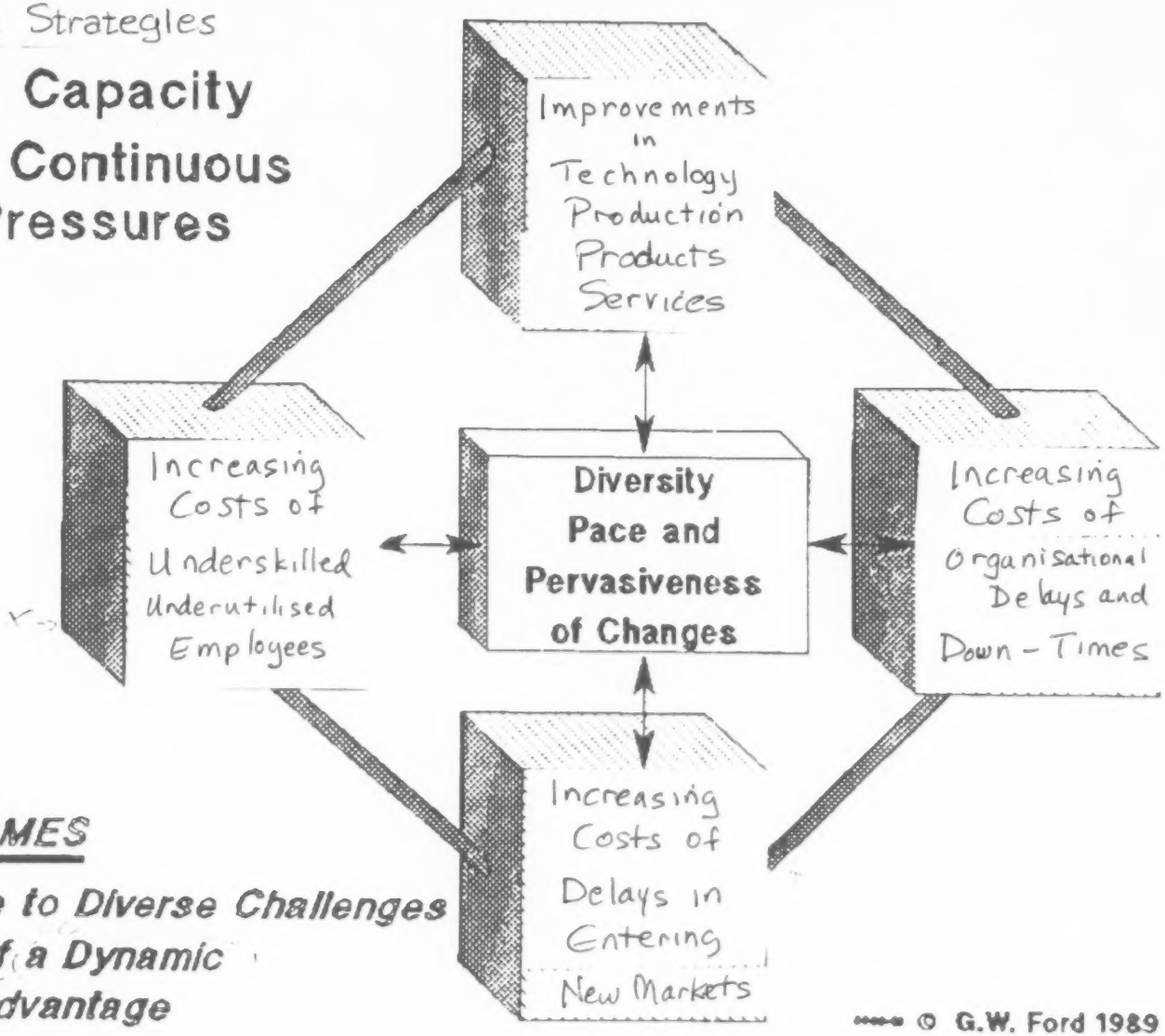
OUTCOME

- *Need for Coherent Holistic Organisational Strategies*

Human Resource Strategies

Reserve Skill Capacity Response to Continuous Interrelated Pressures


Improvements in Technology Production Products Services
Increasing Costs of Underskilled Underutilised Employees
Diversity Pace and Pervasiveness of Changes
Increasing Costs of Organisational Delays and Down-Times
Increasing Costs of Delays in Entering New Markets

DESIRED OUTCOMES

- ***J.I.T. Response to Diverse Challenges***
- ***Development of a Dynamic Comparative Advantage***

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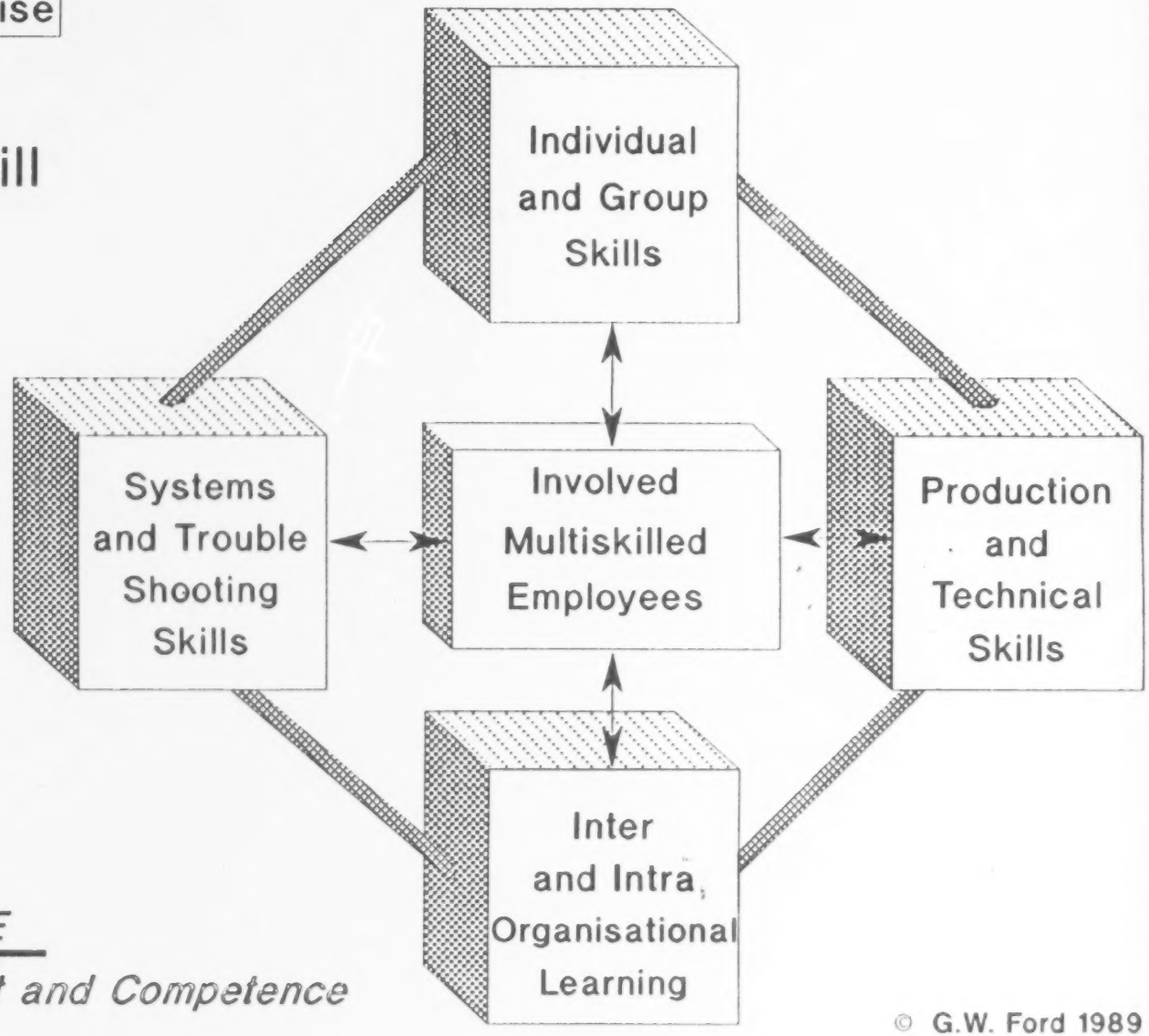
'Just-In-Time' Diversity of Skill Requirements


Individual and Group Skills
Systems and Trouble Shooting Skills
Involved Multiskilled Employees
Production and Technical Skills
Inter and Intra, Organisational Learning

DESIRED OUTCOME

- *J.I.T. Commitment and Competence*

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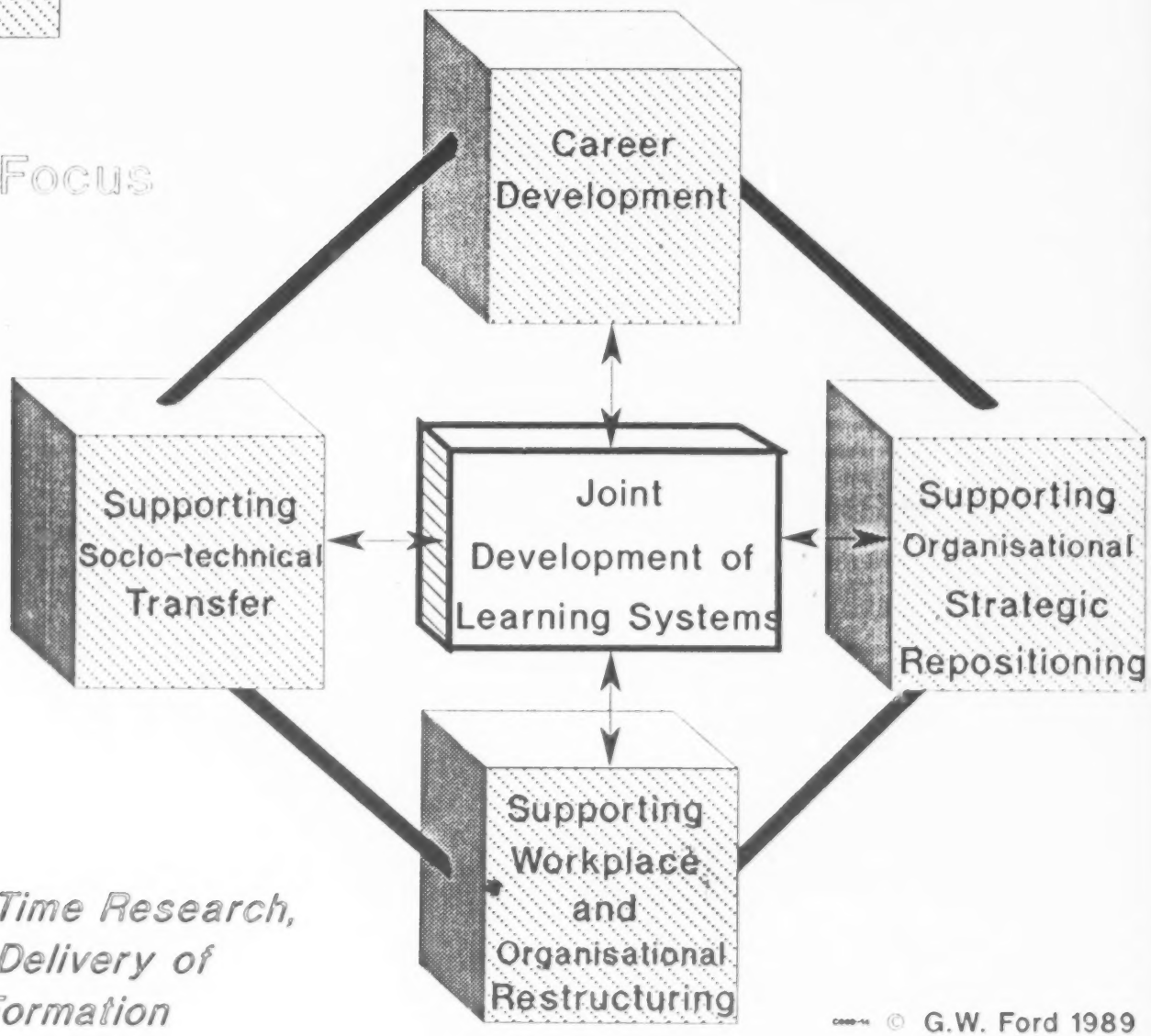
Skill Formation

Providers

Shifting Client Focus



OUTCOME

- *Need for Just-in-Time Research, Development and Delivery of Customised Skill Formation*

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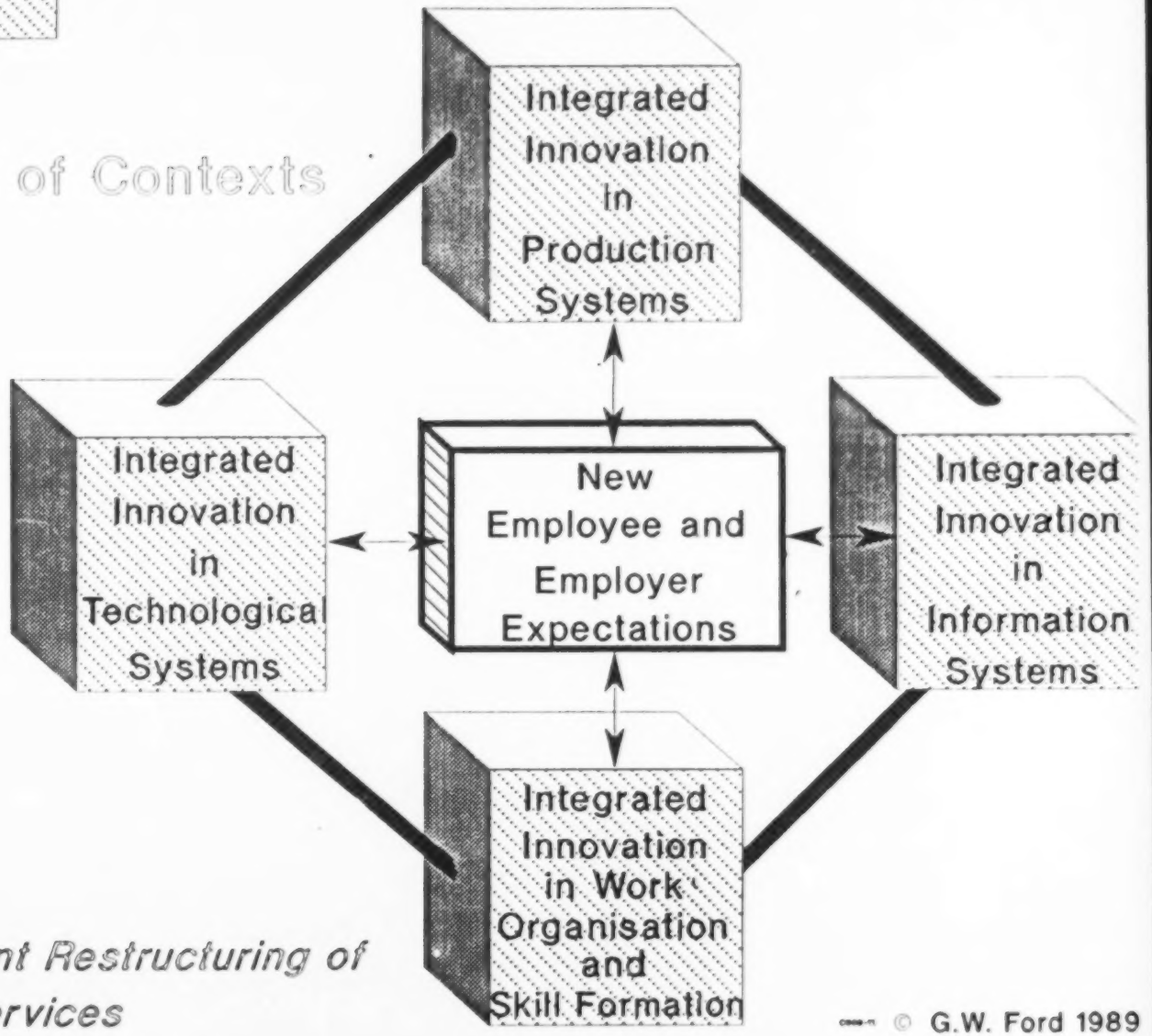
Skill Formation

Providers

Transformation of Contexts

Skills Markets


Integrated Innovation in Production Systems
Integrated Innovation in Technological Systems
New Employee and Employer Expectations
Integrated Innovation in Information Systems
Integrated Innovation in Work Organisation and Skill Formation

OUTCOME

- *Need for Recurrent Restructuring of Skill Formation Services*

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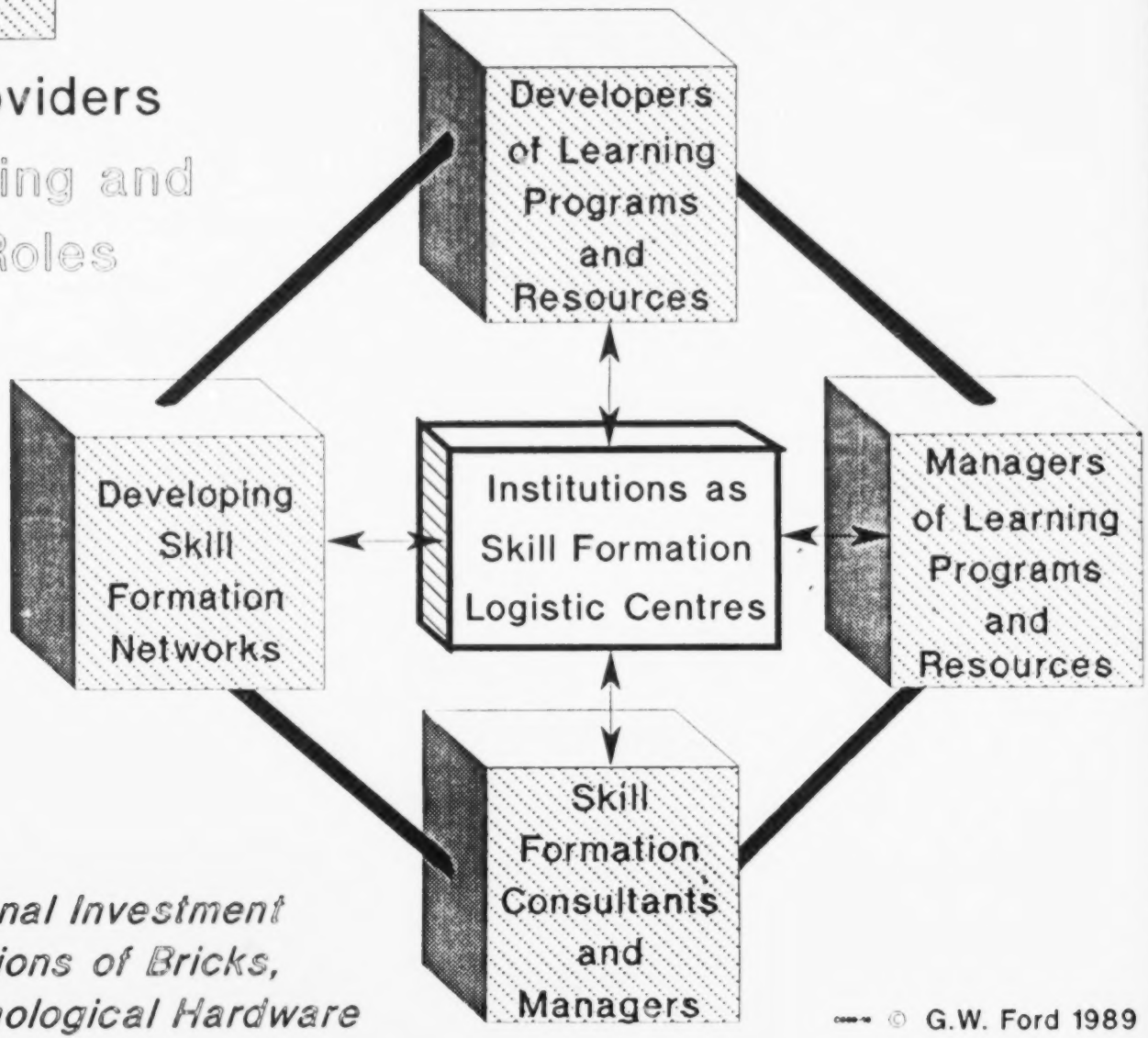
Skill Formation

Institutional Providers

Reconceptualising and Restructuring Roles


Developers of Learning Programs and Resources
Developing Skill Formation Networks
Institutions as Skill Formation Logistic Centres
Managers of Learning Programs and Resources
Skill Formation Consultants and Managers

OUTCOME

- *Shifts in Institutional Investment Away From traditions of Bricks, Mortar and Technological Hardware*

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